NAVAL
MONTE
BRARY
ADUATE SCHOOL
CA 93943-5101

DISASTER PREPAREDNESS PLANNING AND FACILITY CONTINGENCY OPERATIONS FOR PUBLIC WORKS

BY

DAVID J. MAJOR

A REPORT PRESENTED TO THE GRADUATE COMMITTEE
OF THE DEPARTMENT OF CIVIL ENGINEERING IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ENGINEERING

UNIVERSITY OF FLORIDA

FALL 1993

DISASTER PREPAREDNESS PLANNING AND FACILITY CONTINGENCY OPERATIONS FOR PUBLIC WORKS

BY

DAVID J. MAJOR

A REPORT PRESENTED TO THE GRADUATE COMMITTEE
OF THE DEPARTMENT OF CIVIL ENGINEERING IN
PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF ENGINEERING

UNIVERSITY OF FLORIDA

FALL 1993

Thesis
N27728
C.1

DUDLEY KNOX LIBRARY
NAVAL POSTGRADUATE SCHOOL
MONTEREY CA 93943-5101

Dedication

To Mary, Matt and Baby-to-be:

I love you and thank you for the time, space and patience you set aside to allow me to complete this paper.

TABLE OF CONTENTS

Title	Page
Introduction	1-8
Purposes and Objectives	
Potential Disaster Sources	
Hostile Action	
Natural Disasters	
Man-caused Disasters	
Public Works Organization	
Emergency Operations and Organization Concepts	
Emergency Command Center Operations	9-13
General Concept	
Emergency Operations Phase Requirements	
Emergency Command Center Staff Organization	
Communication	14-19
General Concept	
Emergency Broadcast System	
Telephone/Fax/Beeper	
Hand-held/Portable Radio Networks	
Military Affiliated Radio System	
Amateur Radio Service	
Citizens Radio Service	
Messengers	
Media Networks	
Reporting Requirements	
OPREP-3 Special Incident Reporting	
Tempest Reporting	
Availability of Forces Reporting	
Disaster Preparedness and Logistical Support	20-37
General Concept	
Manpower Planning, Protection and Support	
Personal Protection	
Billeting/Shelter	
Messing Facilities	
Facility Planning	
Facility Requirements	
Facility Prioritization	
Facility Hardening and Protection	
Camouflage/Tone Down	
Airfield Protection	
Utility Contingency Planning	
Power Contingency Plan	
Heat Contingency Plan	
Water Contingency Plan	
Gas Contingency Plan	
Waste Water Contingency Plan	
Waste Contingency Planning	
Solid Waste Contingency Plan	
Hazardous Waste Contingency Plan	

Title	Page
Disaster Preparedness and Logistical Support(cont)	20-37
Contract Considerations	
Transportation Planning	
Road Systems	
Airport Facilities	
Rail Systems	
Docking Facilities	
Material, Equipment and Storage	
Dispersal Operations	
Base Denial	
Damage Assessment	38-51
General Concept	
Damage Assessment Techniques	
Damage Reconnaissance Methods	
Types of Damage Assessment	
Airfield Damage Assessment	
Pavement Damage Types	
Airfield Damage Reporting	
MOS Selection	
Airfield Pavement Repair Estimating	
Facility Damage Assessment	
Facility Damage Reporting	
Facility Repair Estimating	
Rapid Runway Repair Organization	52-68
General Concept	
Emergency Operations Phase Requirements	
RRR Organization	
Pavement Damage Preparation	
Foreign Object Debris Cover Methods	
Crushed Stone w/o a FOD Cover	
Precast Concrete Slab	
Regulated Set Concrete Utilizing a Cretemobile	
Fiber Reinforced Polyester Matting	
AM-2 Matting	
Spall Repair	
Airfield Marking	
Runway Lighting System	
Mobile Aircraft Arresting System	
Base Damage Repair and Transportation Support Organization	69-75
General Concept	
Emergency Operations Phase Requirements6	
BDR/TS Organization	
Work Accomplishment Resources	
Support Functions	
Repair Actions	
Conclusions and Recommendations	76-77
Appendix A: Key Terms and Warnings	78-80

Title	Page
Appendix B: Military Engineering Commands, Emergency Management and EPA Regional Directory	81-102
Appendix C: Sample Operational Reports	103-105
Appendix D: NASKEF Utility Contingency Plans	106-109
Appendix E: MOS Selection Kit	110-118
Appendix F: NASKEF Public Works Threat Condition Support Plan	119-121
Bibliography	122-123

LIST OF FIGURES AND TABLES

Figures

		Page
Figure 1.1	Typical Public Works Organization	6
Figure 1.2	Typical Emergency Operations Organization	8
Figure 2.1	Emergency Command Center Staff Organization	13
Figure 5.1	Pavement Damage Categories	43
Figure 6.1	Crushed Stone FOD Repair	59
Figure 6.2	Precast Panel Form Plan and Detail	60
Figure 6.3	Typical Mark-out and Removal Plan	60
Figure 6.4	Precast Slab FOD Repair	62
Figure 6.5	Top View of Cretemobile	63
Figure 6.6	RSC Utilizing a Cretemobile FOD Repair	64
Figure 6.7	FRP FOD Repair	65

Tables

		Page
Table 1.1	USAA Catastrophe History - 1992	3
Table 3.1	NASKEF BSRCC Directory (Partial List)	17
Table 4.1	Military Construction Standards	23
Table 4.2	Facility Priority Listing and Hardening Requirements	26
Table 4.3	Camouflage/Tone Down Methods	27
Table 4.4	Icelandic Air Transportation Facilities (Partial List)	33
Table 4.5	Icelandic Ports	34
Table 4.6	RRR Material Availability Matrix Format	35
Table 4.7	Rapid Runway CESE Availability Matrix	36
Table 6.1	NMCB Air Detachment or Small Detachment CESE Allowance	56
Table 6.2	Recommended HES Mix Design	62

CHAPTER 1
INTRODUCTION

Purpose and Objectives

A recent history study will reveal that war (Desert Storm), civil disturbance (LA riots, NYC World Trade Center Bombing), natural disasters (Typhoon Omar and Hurricanes Andrew and Iniki) and industrial catastrophes (Valdez Oil Spill) are all to often commonplace. These events costs millions to billions of dollars for facility and infrastructure repair and clean-up, countless loss of lives, damage to the environment and dislocation of families and businesses. Because of the unpredictability as to where and when a disaster will occur, sound fundamental facility and infrastructure preparedness planning and management must be conducted to reduce the effects of these incidents.

Common sense dictates that this document can not cover all the circumstances which public works departments will deal with or be subject to reply to during the preparation, assessment and recovery operations following a hostile action, natural disaster or man-caused disaster. It is intended to provide a starting point for military and civilian public works departments in developing an emergency operations doctrine to handle any predictable incidents based on factors such as their military mission, economical importance, geographical location, and personal and public safety. The organization, preparedness plans and facility contingency operations are essential for the public works staff to quickly react and minimize the life loss, property damage and environmental impact while sustaining operational and business services.

Potential Disaster Sources

Hostile Actions

Hostile actions have the basic objective of killing people, destroying facilities and infrastructure and reducing the operational capability of the civilian business sector or military operational function. Large civilian economical and information centers and military air and naval bases supporting combat or contingency operations present lucrative targets for such actions. Attacks may include one or a combination of full and limited scale conventional operations, chemical/biological operations, nuclear operations, terrorism and/or domestic violence. Not only can direct attacks on key operational facilities (i.e., runways, piers) be anticipated, but attacks on resources critical to the operation (i.e., utilities, lines of communication, transportation avenues) can be just as effective in negating operational capability. To successfully sustain the capability to generate combat or economical power despite attacks, a high degree of infrastructure operability must be achieved and maintained. This must include defending the area from attack, minimizing the effectiveness of the attacking force that penetrates the area, rapidly repairing any damage inflicted and continuing services despite the threat or occurrence of an incident.

Natural Disasters

The most unpredictable damage is caused by natural disasters. "Mother Nature" made 1992 the highest ranked year for catastrophic facility loss damages in the United States and its territories history. Table 1.1 provides a listing of natural disaster events for 1992. As evident in Table 1.1, there are very few areas of the country that have not been affected by one type or another of natural disaster.

Table 1.1. USAA CATASTROPHE HISTORY -- 1992

DATE	DESCRIPTION	DATE	DESCRIPTION
2/9	Glendale, CA FLOOD	7/2	Illinois/Indiana HAIL
3/3	Orlando, FL HAIL	7/5	New York HAIL
3/8	Kileen, TX HAIL	7/6	Central States HAIL
3/24	Orlando, FL HAIL	8/24	Florida/Louisiana HURRICANE ANDREW
3/28	San Antonio, TX HAIL	8/28	Guam TYPHOON OMAR
4/10	Kansas City, MO HAIL	9/5	Wichita, KS HAIL
4/19	Texas/Louisiana/Mississippi HAIL	9/11	Hawaii HURRICANE INIKI
4/28	Arlington, TX HAIL	10/3	Tampa, FL TORNADO
5/10	Oklahoma City, OK HAIL	10/7	Texas/Oklahoma TORNADOES
5/22	New Mexico/Texas HAIL	10/10	Mississippi TORNADO
6/6	Texas/Oklahoma HAIL	10/15	Texas HAIL
6/14	Illinois/Indiana HAIL	11/3	Shreveport, LA HAIL
6/19	Wichita, KS HAIL	11/12	Kentucky/Ohio/PA WINTER STORM
6/24	Col Springs,CO/Dallas,TX HAIL	11/21	Central States HAIL
6/24	Florida FLOODS	12/1	Alaska WINTER STORM
6/28	Big Bear, CA EARTHQUAKE	12/10	Northeast WINTER STORM

(USAA,1992,21)

The natural disasters which public works directors should be concerned with and aware of are:

- Hurricanes/Typhoons - Installations and civilian sectors located near the Gulf of Mexico, the Atlantic Ocean seaboard and Pacific islands are subject to hurricane/typhoon damage annually. Even those areas located inland may be subject to severe weather from tropical lows that support hurricanes as they move inland. Severe weather associated with hurricanes may include tornadoes, heavy rains and flooding.
- Tornadoes - Tornadoes may be classified as the most violent weather phenomena known and the top natural disaster killer in the United States. Although the damage is centralized by funneled shaped clouds 1/4 to 1/3 miles wide and 16 miles long, the rotating velocities of the winds may reach 500 mph. Tornadoes are severally difficult to provide any early warning of their occurrence. Severe weather associated with tornadoes may include hail storms, heavy rains and flooding.

- Floods - Floods are the most common and widespread of all natural hazards. Flooding may occur from any accumulation or rise in the water table. Flooding, caused by heavy rains, snow melts, tropical storms, hurricanes, and seismic activity, can effect areas located within the 100-year flood plane and all low lying areas. Severe weather associated with flooding may include snow storms, heavy rains, tornadoes, earthquakes and volcanic eruptions.
- Blizzards, Severe Cold and Snow Storms - Normally associated with the winter season, blizzards, severe cold and snow storms may bring many activities to a stand still by bringing transportation to a halt and disrupting utility services. Severe weather associated with winter storms may include flooding.
- Volcanic eruptions - Even though the east cost is not currently subject to volcanic eruptions, various portions of the country are subject to damage related from eruptions. Mount Saint Helens, in 1980, proved that even dormant or inactive volcanoes must be considered a potential disaster source. Severe weather associated with volcanic eruptions include flooding and global weather/cooling changes.
- Earthquakes - Earthquakes may occur on both coasts are subject to earthquakes and tremors associated with plate tectonics shifts. They are very unpredictable and have the potential to inflict the greatest loss of life and property. Severe conditions associated with earthquakes may include flooding and landslides.

Man-Caused Disasters

Other potential harm may be caused by man-made and technological disasters such as:

- Fire - Even though not all fires are man generated, the majority of fires start as a result of human action or ignorance. Fires may be grouped into two types; fires to facilities and infrastructure and fires to forests and grasslands.
- Explosions - Explosions present a danger as a result of blast force, flying debris, intense heat and fire they produced.
- Transportation Accidents - Aircraft, ship, and surface transportation to any major transportation means can cause temporary isolation to areas. Particular concern should be placed on accidents involving potential damage to environment and people from petroleum and hazardous material spills.
- Radiological Emergencies - Accidents involving nuclear power and weapons and hospital materials could cause various health and environmental problems.
- Hazardous Material/Waste Emergencies - Spills or existing site locations may be subject to all natural and man-made occurrences resulting in harm or potential dangers to people and the environment. Particular areas of concern should be gas and chemical leaks.

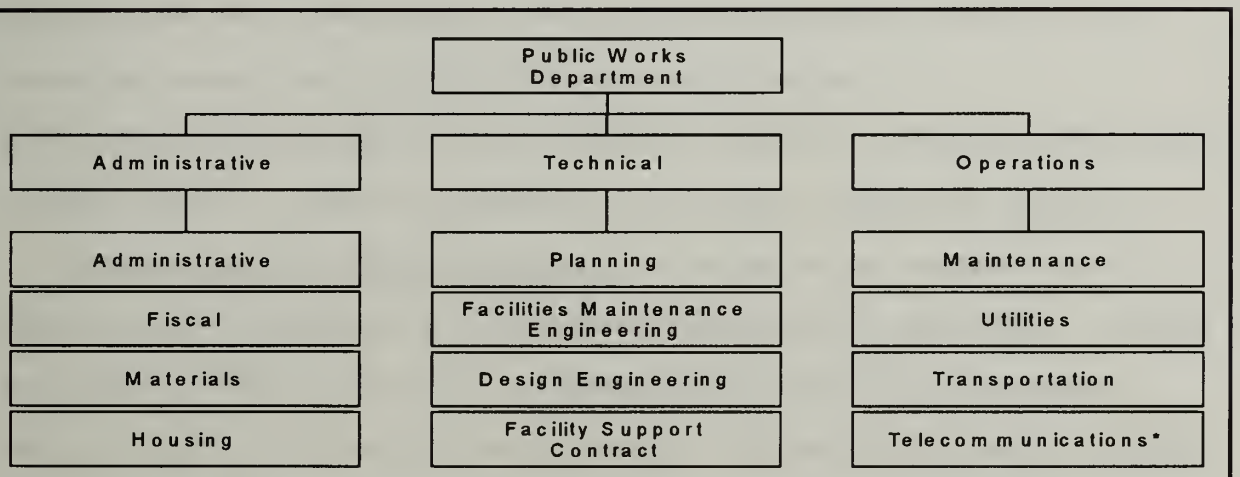
Public Works Organization

"Public Works are the physical structures and facilities that are developed or acquired by public agencies to house governmental functions and provide water, power, waste disposal, transportation, and similar services to the public..." (Burnett,1986,3)

The Burnett definition is a standard definition and listing of services which a public works department manages. A typical organization will consist of administrative, technical and operational divisions, Figure 1.1. Administrative functions include general administrative, fiscal control,

material and housing support functions. Technical functions include master planning and real estate, facility maintenance, design engineering and contract support functions. Operational functions include maintenance, utility, transportation and telecommunication support functions.

Figure 1.1. Typical Public Works Organization



* Telecommunications functions are currently being transferred to Naval Communications and Telecommunication Command. This has been completed, except for a few OUTCONUS locations.

Emergency Operations and Organization Concepts

The unpredictability of disasters and the fact that public works service functions impact more areas than any other single organization, including fire and law enforcement, dictate the critical need for the director to establish an innovative response doctrine. The department might also be operating in an environment which the standard operating procedures may no longer apply. Therefore, a proper organization is critical to maintaining command and control and efficiently executing any contingency operation. As such, the public works director needs to develop a standing emergency organization as part of the overall department's operational plan. The organization needs to

be structured such that existing public works assets are utilized to the maximum extent possible to accomplish all phases of the repair effort while being flexible enough to work in close coordination with any and all construction and/or engineering forces which may deploy to the area.

Once a warning has been received or an accident has occurred, the public works manager must take immediate actions to minimize the effects of the impending incident and following such an event, restore facilities/infrastructures to full operating condition. These actions consist of three phases: survival, assessment and recovery operations, Figure 1.2.

Emergency Control Center (Chapter 2) The center is responsible for organizing and directing all facility and infrastructure operations. The ECC should act as the central point for damage inputs and directs the damage response based on the established priorities. The center has overall control of the survival, assessment and recovery operations.

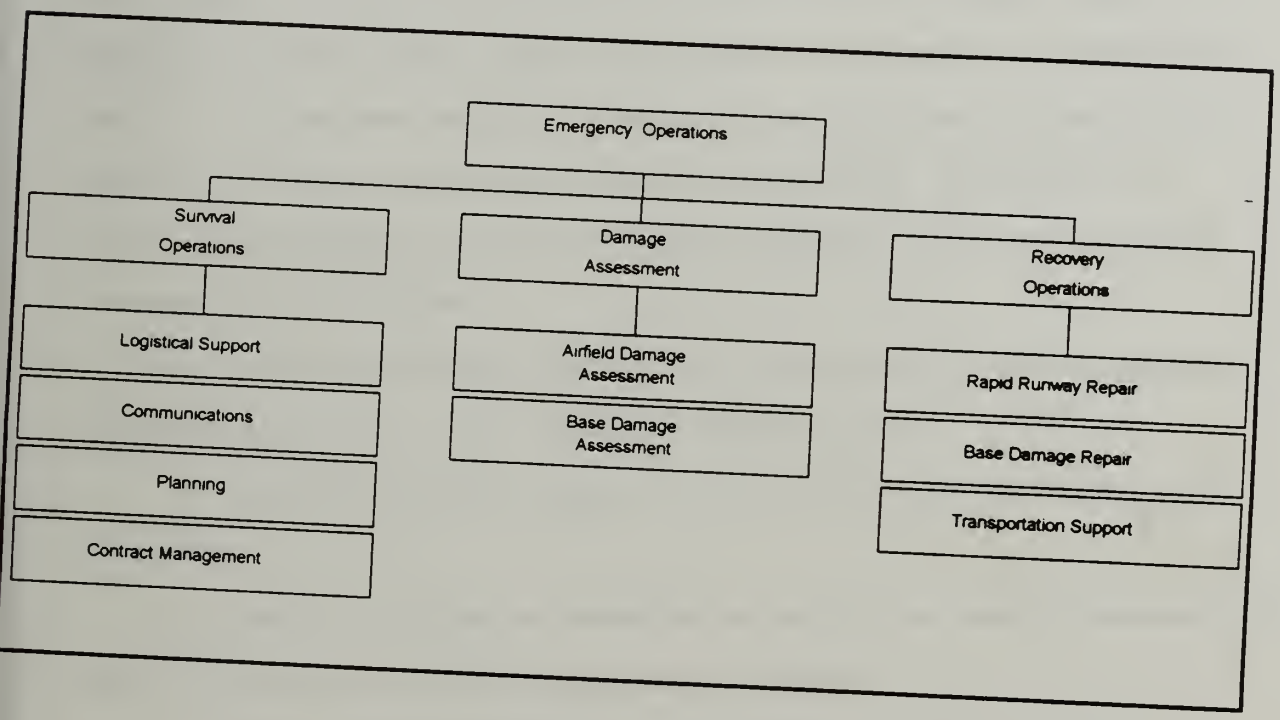
Survival Operations (Chapters 3.4) Survival operations are responsible for providing the logistical support, disaster preparedness planning and protection, communication and contract management necessary to support, protect and defend the specified area.

Damage Assessment (Chapter 5) Damage Assessment Teams (DATs) are responsible for providing the initial and continuing assessment of airfield and facility/utility structures and surfaces and repair estimates for airfield and facility repairs. Damage information will be relayed from the field to the ECC.

Recovery Operations (Chapters 7,8) Upon notification of damage, repairs parties will be dispatched to remediate damage and/or minimize the operational impact the damage has caused. The recovery operation maybe be broken down into rapid runway repair (RRR), base damage repair (BDR) and transportation

support (TS) operations. The RRR Organization is responsible for completing and maintaining all expedient and permanent repairs to airfield surfaces. The BDR Organization is responsible for completing the expedient repairs to all damaged base facilities other than the airfield pavements and maintaining operation of utility systems. The TS Organization is responsible for providing transportation support, vehicle dispatch and maintenance and repair services to the ECC organizational units.

Figure 1.2. Typical Emergency Operations Organization



CHAPTER 2
EMERGENCY COMMAND CENTER OPERATIONS

General Concept

The public works department should be converted into an emergency command center (ECC) to maintain command and control of the varying players involved in disaster/emergency operations for facility and utility services. The center will be established to oversee and direct all actions related to the support and repair of facility and infrastructure damage, support the construction and military augmentation forces and support and service the public. An alternate emergency command center (AECC) may be required for repetitive actions, security and command and control. The AECC is of particular importance in a hostile action situation. The center mission statement should include:

a. maintain a 24-hour control center operation to provide continuous damage assessment and repair operation coordination;

b. provide logistical support to all construction and engineering resources;

c. maintain continuous communication within the organization and with higher authority concerning damage repair efforts;

d. direct maintenance/construction efforts to minimize the vulnerability to damage;

e. direct the individual Damage Assessment Teams (DAT) to reconnoiter and survey the airfield and station facilities to identify, locate, report, and assess the extent of damage;

f. direct the efforts of the Rapid Runway Repair (RRR) Organization based on operational guidance provided by higher authority;

g. maintain base utility system operation or provide point contact and liaison to company owned utility system;

h. direct the efforts of the Base Damage Repair (BDR) Organization based on repair priorities and the availability of personnel, equipment, materials and funding;

i. direct the recall, dispatch, repair and maintenance of vehicle assets through the Transportation Support Organization.

Emergency Operations Phase Requirements

Emergency operations may be broken down into four phases; survival, assessment, recovery and restoration operations. The following is a listing of minimum Emergency Command Center phase requirements:

a. Survival Phase

(1) Muster organization. Brief all personnel on current situation. Review all operational plans and all associated instructions. Review dispersal and recall procedures.

(2) Establish ECC and AECC, if necessary. Inventory maps, RRR MOS Kit and status boards.

(3) Make all logistical arrangements.

(4) Set up and test communications (include coordination with explosive ordnance disposal (EOD) for ordnance removal support, fire department for fire fighting support and hospitals for emergency medical support).

(5) Issue personal protective gear and equipment, if necessary.

(6) Determine existing contract outcome. All existing contracts should be determined to be either completed, accelerated or terminated.

b. Assessment Phase, details provided in the damage assessment chapter, Chapter 5.

(1) Establish assessment assignments and vantage points. Dispatch damage assessment teams following incident.

(2) Calculate and report Minimum Operating Strip (MOS) estimates and recommendations.

(3) Prioritize and report repair accomplishment from damage assessment reports.

c. Recovery Phase, details provided in the recovery operations, Chapters 6 and 7.

(1) Direct repair efforts.

(2) Report damage and status updates.

d. Restoration Phase.

(1) Submit final operational report.

(2) Return to normal operations.

ECC Staff Organization

The ECC staff organization, Figure 2.1, will maintain a 24-hour watch in a centralized location. The staff provides administrative assistance to the ECC Watch Officer and other members of the ECC Team. Each staff section should consist, at a minimum, of the following:

ECC Watch Officer/Chief. The ECC Watch Officer/Chief is responsible for the overall supervision of the ECC staff and serves as the ECC OIC during the watch. The Watch Officer is responsible for maintaining control over all damage assessment and repair operations. The Watch Officer will dispatch and direct the DATs, determine the priority of repair actions based on operational guidance and technical advice, determine possible MOSs based on ADAT

information, dispatch and provide overall direction to the repair teams, and report the status of repair efforts to higher authority.

Administrative Watch Officer/Chief. The administrative watch officer/chief is responsible for the overall supervision and oversight of the logistical support required for all operations and report all logistical information and status updates.

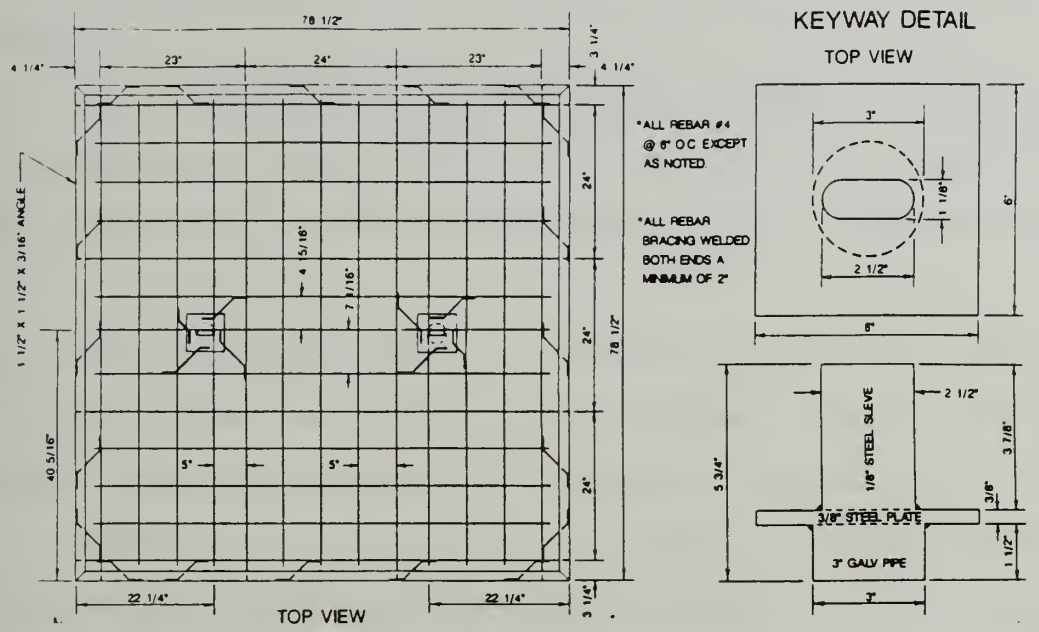
MOS Watch Officer/Chief. The MOS Watch Officer/Chief is responsible for the direct supervision of the MOS staff members, review of all section incoming and outgoing communications, recommend and estimate minimum airfield operating strips, ensure the timely update of the status boards, and provide technical advice to the ECC Watch Officer and repair teams.

Facility Watch Officer/Chief. The Facility Watch Officer/Chief is responsible for the direct supervision of the facility staff members, review of all section incoming and outgoing communications, ensure the timely update of the BDR/Utility status boards, and provide technical advice to the ECC Watch Officer and repair/utility teams.

Communicator. The communicator is responsible for the direct supervision of the damage assessment teams (DATs), maintaining continuous communication with the DATs, the individual repair and support teams, and higher authority both by any and all means of communications available. The communicator will maintain a hard-copy log report of all communications.

Damage Plotter. The damage plotter(s) is responsible for plotting any reported damage on airfield and facility/utility maps in the ECC as directed by the respective Watch Officer/Chief. The damage plotter will work with the communicator to ensure a smooth flow of communication occurs within the control center.

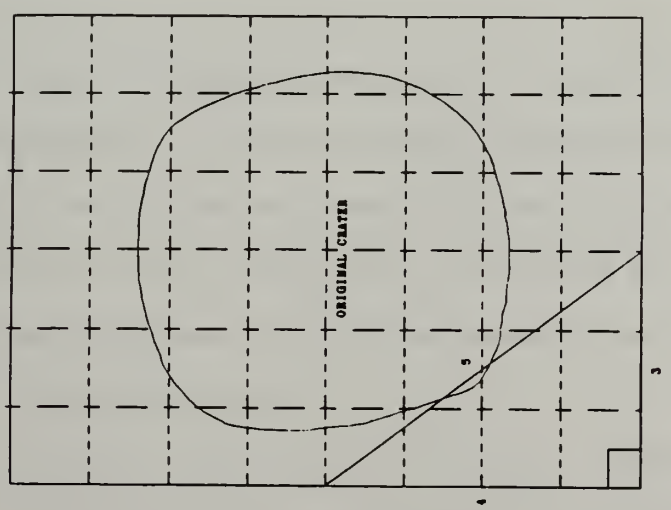
Figure 6.2 Precast Panel Form Plan and Details (20th NCR, 1993, 1.62-2)



Repair operations should take the following steps[2]:

a. Clear debris and determine upheaval. Mark out for a whole number of slabs in order that no slabs will be required to be cut to install cover, see Figure 6.3.

Figure 6.3 Typical Mark Out and Removal Plan (20th NCR, 1993, 1.62-4)



[2]Repair sequence is established using 20th NCR Student Handbook, AFESC Volumes I and II, CBLANT/CBPAC OPLAN 9000 and experience in method placement from military tour in Iceland. Other subbase methods may be used, but will not be provided, see references for further details.

b. Remove the upheaval after determination is made as to extent of damaged area.

c. Place geotextile fabric in the bottom of crater, if available. Begin fill procedures using stone fill or ejecta, not greater than 12 inches in size. Crater should be filled and compacted to 10-12 inches below grade mark.

d. Place a geotextile fabric, if available, on top of the debris or ballast rock to prevent water inflow into the aggregate fill and prevent the higher quality stone from settling into the ejecta or ballast rock.

e. Backfill with 3/8 inch gravel or crushed stone (NAVFAC Guidespec NFGS-02233, Graded Crushed Stone for Flexible Pavement) to 4 to 5 inches thick. Pack lift to 100% in accordance with ASTM D1557.

f. Screed or skim crater to 5 1/2 inches below grade level. Level area with sand.

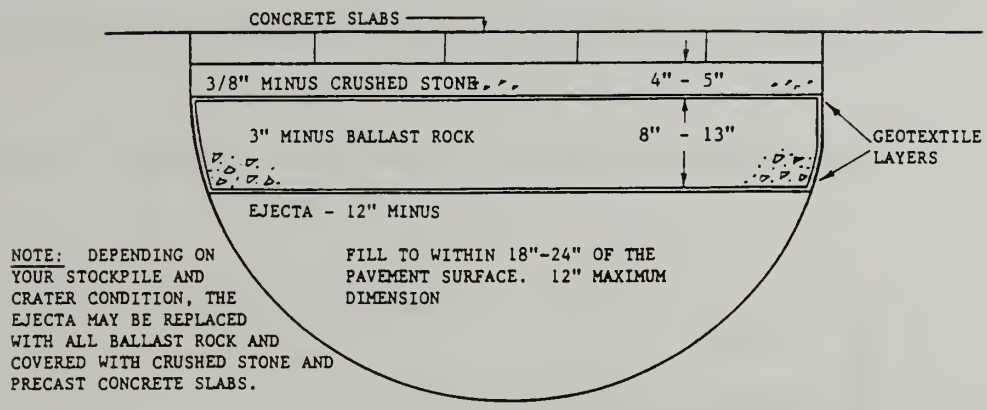
g. Place and install slabs using a screed beam or other lifting device using the slab built in key ways. Settle the slabs by rolling heavy equipment over them.

h. Conduct a final surface roughness check to ensure that the surface does not exceed tolerances. If it is not within tolerances, the repair is unacceptable. Repair the unacceptable areas by repeating procedures f and g outlined above. The final repair should look like Figure 6.4.

i. Sweep around the crater and continue sweeping the airfield until the pavement surface is free of all debris.

j. A permanent repair using high early strength concrete or asphaltic-concrete should be made as soon as flight operations will allow. Until this takes place the patch should be inspected at a minimum of every 50 passes for concrete failure and/or upheaval of slabs.

Figure 6.4 Precast Slab FOD Repair (20th NCR, 1993, pg 1..6-3)



Regulated Set Concrete Utilizing a Cretemobile, Figure 6.6

The regulated set concrete utilizing a cretemobile FOD cover method consists of a pore of regulated set or high early strength (HES) concrete using a cretemobile over a compacted stone base. The repair is a permanent repair. Table 6.2 provides the recommended HES mix design for airfield pavement repairs:

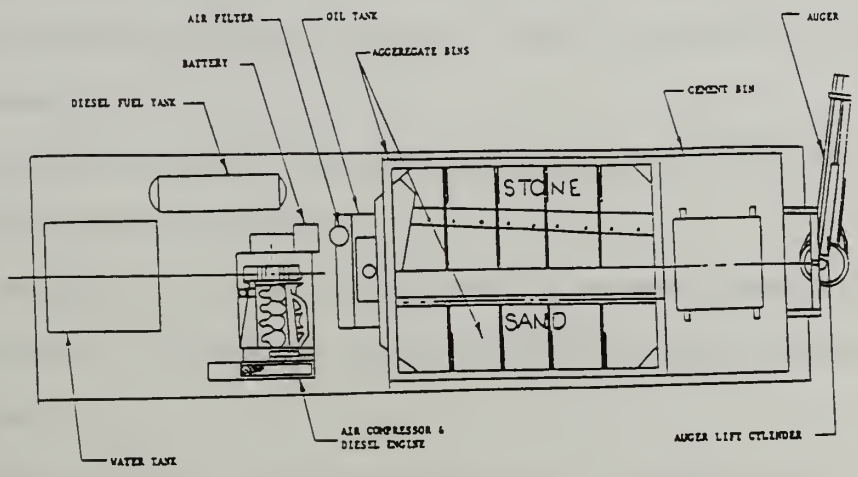
Table 6.2 Recommended HES Mix Design (CBPAC/CBLANT OPLAN 9000,1990,C-VI-C-1/2)

ITEM	SPECIFICATION	AMOUNT/TYPE
CEMENT	ASTM C150 TYPE III	752 LBS (8 BAGS)
COARSE AGGREGATE	ASTM C33 NO. 57	1900 LBS SATURATED - SURFACE DRY ABSORPTION - 0.6 % SPGR - 2.62 UNIT WEIGHT - 107 LB/CF
FINE AGGREGATE	ASTM C33	916 LBS SATURATED - SURFACE DRY ABSORPTION - 0.6 % FM - 2.80 SPGR - 2.62
WATER	POTABLE	32.5 GALLONS
WATER REDUCER	ASTM C494 TYPE A,E,F,G	37.6 OZS - MASTER BUILDERS POZZOLITH LL960
ACCELERATOR	ASTM C494 TYPE C	120.0 OZS - MASTER BUILDERS POZZOLITH 122-HE
AIR ENTRAINER	ASTM C260	TEMPERATURE DEPENDENT - OPTIONAL

A cretemobile is a mobile concrete unit which carries unmixed materials (sand, cement, aggregate, water, addetives) to the site where it mixes the

concrete to design specifications. The unit may be resupplied for continuos concrete manufacture, if necessary. A typical cretemobile is shown in Figure 6.5.

Figure 6.5 Top View of Cretemobile (20th NCR, 1993, 1.65-7)



Repair operations should take the following steps[3]:

a. Clear debris and determine upheaval. Unlike the precast method, the only restriction for mark out is the extent of damage.

b. Remove upheaval after determination is made as to extent of damaged area.

c. Place geotextile fabric in the bottom of crater, if available. Begin fill procedures using stone fill or ejecta, not greater than 12 inches in size. Crater should be filled and compacted to the 18-24 inches below grade. Compaction should be completed with at least two or three passes of a bulldozer or grader.

d. Place a geotextile fabric on top of the debris or ballast rock to prevent water inflow into the aggregate fill and prevent the higher quality

[3]Repair sequence is established using 20th NCR Student Handbook, CBLANT/CBPAC OPLAN 9000 and experience in method placement from military tour in Iceland. Other subbase methods may be used, but will not be provided,see references for further details.

stone from settling into the ejecta or ballast rock, if available.

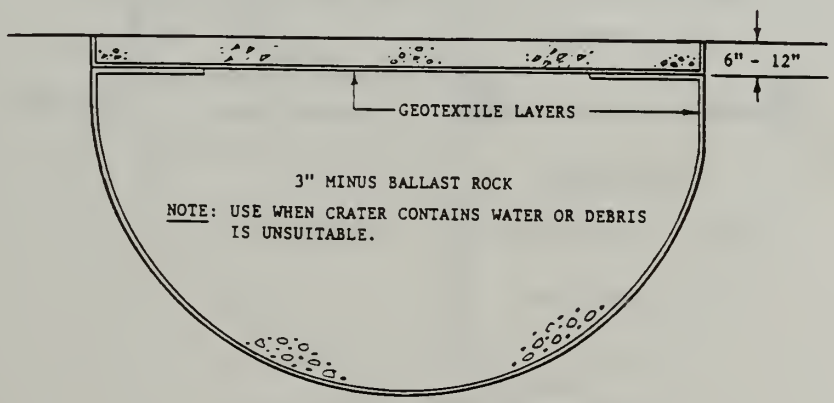
e. Backfill in using 10-12 inch lifts of either 3" minus ballast rock or crushed stone to 6-12 inches below grade. Compact last lift to 100%. Place a geotextile on top, if available.

f. Pour HES or Regulated Set Crete using the cretemobile. Finish concrete to meet surface roughness required. Figure 6 provides finished product appearance.

g. Sweep around the crater and continue sweeping the airfield until the pavement surface is free of all debris.

h. Even though the cretemobile method is a permanent repair the area should be inspected at a minimum of every 100 aircraft passes after the initial 50 passes.

Figure 6.6 RSC Utilizing a Cretemobile FOD Repair (20th NCR, 1993, 1..6-2)



Fiber Reinforced Polyester (FRP) Matting, Figure 6.7

The FOD cover consists of fiber reinforced polyester matting over a compacted stone base. Repair operations should take the following steps[4]:

[4]Repair sequence is established using 20th NCR Student Handbook, AFESC Volumes I and II, and CBLANT/CBPAC OPLAN 9000. Other subbase methods such as sand grid, choked-ballast and cheap-ballast methods may be used, but will not be provided or presented. See References for further details.

(1) Perform Steps 1-6 of Compacted Crushed Stone Method

(2) Assemble mats adjacent to the site and tow to crater.

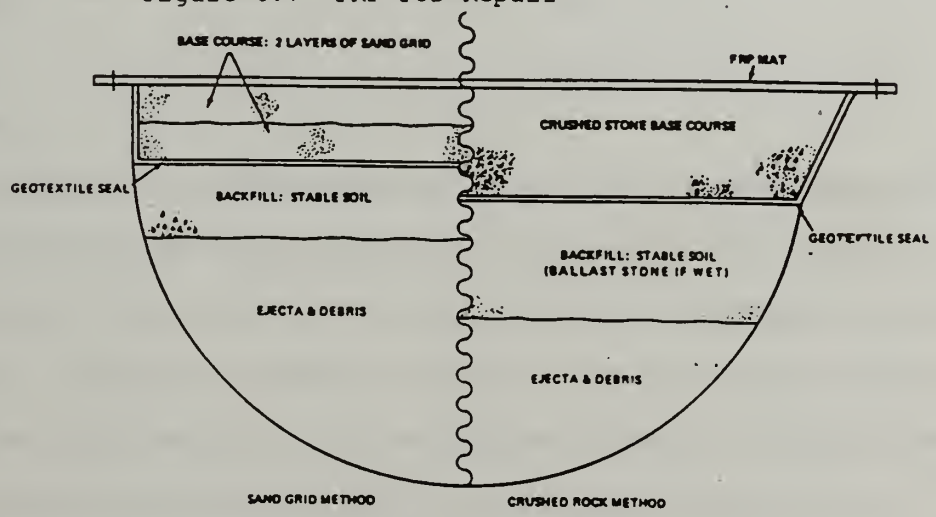
(3) Cover crater and secure mats to surface.

(4) Conduct a final surface roughness check to ensure that the surface does not exceed tolerances. If it is not within tolerances, the repair is unacceptable. Repair the unacceptable areas using the procedures outlined above.

(8) Sweep around the crater and continue sweeping the airfield until the pavement surface is free of all debris.

(9) A permanent repair using high early strength concrete should be made as soon as flight operations will allow. Until this takes place the patch should be inspected at a minimum of every 50 passes.

Figure 6.7 FRP FOD Repair



AM-2 Matting

The FOD cover consists of a steel matting over a compacted stone base. AM-2 matting is to be only used on taxiway, ramp areas and/or expeditionary airfields. It is unsuitable for use on runway repairs. The same placement methods used for FRP mats are used for AM-2 matting.

Spall Repair

The FOD cover to repair spalled areas is primary a using rapid setting cements and pea gravel over existing runway surfaces. Current Naval Civil Engineering Laboratory (NCEL) recommendations to repair spall areas is to use a combination of rapid setting cements and pea gravel. Recommended rapid setting cretes are[5]:

Regulated Set Cement (REG SET)

Magnesium Phosphate Cement (SET 45)

High Early Strength Type Cement (PYRAMENT)

The spall should be filled by a combination of pea gravel and cement grout. The spall must be floated or trawled to produce a smooth, flush repair surface. Ensure manufacturer's instructions are read prior to repairs, paying particular attention to temperature and weather constraints.

Airfield Marking

Airfield marking is the identification of the MOS. Marking procedures include the obliteration of existing marking which conflict and installing new markings on the MOS. Edge markers are used to identify the boundaries of the MOS. If possible, a centerline should be shown as a painted broken of the MOS. All existing runway markings that could cause confusion regarding the MOS location should be eliminated by painting over them. Distance-to-go markers should also be installed.

There currently is no standard MOS marking system. Once the system is developed, procured, and prepositioned, improvised systems will be utilized. Edge markers can be constructed of reflective painted, plywood structure,

[5]Repair method and recommendations are established using 20th NCR Student Handbook and CBLANT/CBPAC OPLAN 9000. See references for further details.

secured with sandbags. Distance-to-go markers will be similarly constructed. Improvised systems should be constructed during the survival phase if time and materials permit.

Runway Lighting Systems

Power must be supplied to the existing or expedient runway light system. The primary and back-up feeder for airfield lighting must be laid out and understood. Emergency back-up generators with one day fuel supply, at a minimum, should be part of the lighting system circuitry. Airfield lighting controls should be capable of being controlled from either the control tower or directly from the lighting vault. Portable generator capability should calculated and supplied for any expedient lighting system.

It is likely that a section(s) of the distribution airfield lighting cable will be cut or disrupted. Repairs to the existing system by splicing around breaks should be attempted first for expedience. However, if the lighting system is extensively damaged, a new lighting system will have to be installed. Power should be supplied from either the lighting vault or emergency generators, whichever is more practical.

When the existing runway lighting system cannot be utilized because of damage, an expedient or emergency airfield lighting system must be deployed. There currently is no standardized system. Once the system is developed, procured, and prepositioned, an improvised system will have to be utilized.

Mobile Aircraft Arresting Systems

Mobile aircraft arresting systems (MAAS) are capable of being rapidly deployed and installed. The Navy is currently developing an improved MAAS.

The existing system, M-21, has limited mobility and requires frequent maintenance.[6]

[6]According to COMCBLANT/COMCBPAC OPLAN 9000.

CHAPTER 6
BASE DAMAGE REPAIR AND TRANSPORTATION SUPPORT ORGANIZATION

General Concept

The mission of Base Damage Repair (BDR) operations is to operate utility systems and repair damaged mission-critical facilities and utility systems. The Transportation Support (TS) operations is to support recovery operations by vehicle dispatch, purchase and issue, refueling, material clearing and grounds maintenance operations. Unlike the rapid runway repair organization, BDR and TS operation are extension of services provided during normal operations. In order for the ECC organization to direct its resources to the most critical requirements first, the following should be the established facility/transportation repair priorities:

a. Clearing emergency access routes.

b. Support mass casualty and emergency shelter operations.

c. Utilities restoration and emergency utility support.

d. Facility dry-in.

e. Debris removal and disposal.

f. Facility restoration.

Emergency Operations Phase Requirements

BDR/TS operations can be broken down into several distinct phases with each phase containing several supplements.

a. Survival Phase.

(1) Review Utility contingency plans, facility priority list, and facility hardening/camouflage list. Begin work to reduce infrastructure damage per priorities established by the ECC.

(2) Review contingency support plans.

(3) Test communications. Coordinate with Fire Department for base fire fighting support.

(4) Inspect material stockpiles and local routes. Inventory quantity of materials available and report inventory to ECC. Disperse materials and restock if possible and time permits.

(5) Reconnoiter base complex.

(6) Prepare CESE for operations. Load and disperse equipment.

(7) Assist in evacuation of personnel.

(8) Disperse personnel.

b. Assessment Phase.

(1) Damage Assessment

(2) UXO Sweep/Explosive Ordnance Disposal

(3) In-house/Contract Decision.

(4) Contract Documentation and approval.

c. Recovery Phase.

(1) Clear access routes

(1) BDRT Mobilization

(2) Utilities Repair

(3) Structural Repair

(4) Emergency Contract Repair

d. Station Restoration. During this phase permanent repairs to station facilities and utility systems are made. Permanent repairs will be conducted per the facilities priority putting emphasis on critical operating facilities over all others.

BDR/TS Organization

Proper organization is critical to maintaining command and control and efficiently executing BDR/TS operations. Non-augmenting and augmented BDR organizations and plans must be developed. BDR training and exercises should be conducted to execute this organization. The organization should field utility operation crews and as many repair crews as the onsite manpower, materials and equipment will support. As a result, each member of the organization should understand the BDR/TS operation, organizational function and assigned task accomplishment.

Emergency Command Center (ECC) Oversees and directs the overall Station recovery actions including facilities operations.

NMCB Command Center Oversees and directs efforts of the Battalion/Detail organization. Will report to or be part of the Station Emergency Command Center.

Damage Assessment Team (DAT) Responsible for reconnoitering and surveying the airfield and station facilities to identify, locate, report, and assess the extent of attack damage.

Facility Assessment Team Responsible for plotting and recording DAT information and make recommendations/estimations to the ECC OIC at prospective facility repairs and utility systems status.

BDR OIC/AOIC. Directs the in-the-field facility repair operations.

Utility OIC/AOIC Directs the in-the-field utility repair operations.

Base Damage Repair Crews Responsible for repairing damaged facilities and utility systems. Includes engineering capability to determine actual damage vice apparent damage, as required.

Utility Operating Crew Responsible for operating the electrical, water, and heat plants on the station and outlying sites.

TS OIC/AOIC. Directs the in-the-field transportation support operations.

Transportation Assessment Team. Responsible for dispatch and tracking information of all transportation assets. Includes estimating equipment repairs.

Transportation Support Repair Crews. Responsible for operating heavy equipment in assistance to the repairs of damaged facilities and utility systems. Includes demolition capability, as required.

Transportation Equipment Repair Crews. Responsible for transportation equipment repairs.

Work Accomplishment Resources

Once the damage has been incurred to the facilities and the assessment process has established a damage assessment data base, the work must be prioritized for completion. The organization must determine who will accomplish the work required. The work can be completed by in-house work forces, augmenting forces, or by contract. The decision should be based on availability, expertise and time.

In-house Public Works Forces. The in-house work force will be the first forces on site to restore essential utility services, minimize facility damage and protect the public from hazards. It must be remembered that they are the local expertise and have the core knowledge of the existing facilities and infrastructure systems and condition of such systems. They also will remain to carry on the repairs and take equipment ownership after the emergency ends and augmenting troops leave the area.

Seabees/NCEL/NEESA. Forces should be used for expedient facility dry in, power restoration and mobile power sources and clearing operations.

Service Contracts. Existing service contracts may be expanded. Maintenance service contracts listing should be developed for use. Types of contracts which should be used are roofing, ground maintenance, paving (road access clearing and waste removal), custodial (interior water cleanup), refuse collection and disposal. Small purchase contracts can take up some of the remaining work load.

Letter Contracts. Authority must be approved to use other than full and open competition. Primary use should be considered in roof dry in and repair, power poles. Bidders lists are prepared and work announcements posted. Following work commencement the scope and price were defined and negotiated.

Job Order Contracts. Job orders are cut to contractors similar to in-house job orders. The work is accomplished on a unit price per type job order.

Firm-fixed price Contracts. Larger contracts should still be conducted under firm-fixed price contracts. Large rereoofing, paving, fencing and piling work is not recommended for use with the other contract methods.

Military Construction Contracts. Contracts should be used to replace facilities or major utility systems replacement.

Vehicle and Real Estate Leases. Vehicle and real estate leases may be required to obtain the necessary vehicles to support augmenting troops and real estate to support emergency shelters, material staging areas and augmentation beddown. Respective Naval Facilities Engineering Commands and/or local planning and real estate officials should be contacted for lease expertise.

Support Functions

The organization will be responsible for support of other higher authority support functions. These functions may include:

Mass Casualty. Various disaster sources may cause not only property damage but loss of life. The organization may be called upon to provide vehicle transportation, heavy equipment operators, establishing field hospitals, and emergency center support.

Threat Condition. Different threat conditions caused by hostile actions may require various actions by the organization to support law enforcement actions and personnel and facility safety. Appendix F provides an example of Public Works support plan for threat conditions.

Non-combatant Evacution or Civilian Evacuation. Military or civilian evacuation may require various support ranging from transportation to setting up emergency evacuation centers.

Repair Actions

A minimum of temporary repairs should be made. It is realized that it is impossible not to make temporary repairs, but when the choice between a temporary repair and permanent repair is minor the permanent repair should always be chosen. This can be a key time saver to the organization, because the less amount of rework in an emergency operations situation the better the organization can priority remaining work without the added burden of doing work twice (parallel to everyday operations).

The manner by which repairs are made should also be discussed thoroughly. Repairing or restoring to previous condition may be building problems for the future. Examples include:

a. Overhead utility lines should be considered to be place underground, if feasible. Many choices are based on current cost. However, if a hurricane hits your area on the average of every 10 years, the cost benefit analysis should show a definite cost savings by installing underground lines now. This

provides a greater service to the customer and decreases the chances of damage in the future.

b. Building reconstruction should use the most stringent building codes available. Building to substandard code or design requirements is placing undo burdine on the facility user, your maintenance personnel and have reduced lifetime expectancy. This is not to mention the cost of repairing the facility everytime above average weather conditions approach the area.

CHAPTER 7
CONCLUSION

This document is intended to provide a starting point for military and civilian public works departments in developing an emergency operations doctrine to handle any predictable incidents based on factors such as their mission, economical importance, geographical location, and personal and public safety. It deals with common circumstances which public works departments will be required to deal with or be subject to reply to during the preparation, assessment and recovery operations following a hostile action, natural disaster or man-caused disaster. The organization, preparedness plans and facility contingency operations are essential for the public works staff to quickly react and minimize the life loss, property damage and environmental impact while sustaining operational and business services.

If it done correctly, limited service operations are only disrupted in localized areas for short periods of time and the news coverage is about the personal losses. However, if it is done incorrectly, the city or base is without a major service (i.e., water distribution) for an extended period of time slowing and bogging down the repair efforts and the news coverage is about the lack of services provided to the area residents already suffering from the tragedy personally. Disaster preparedness can not and should not be taken lightly. All major infrastructure systems should be examined, requirements known and documented, back-up operating procedures established and incorporated into everyday operations. This system will provide the public works director with the knowledge and competence necessary to handle all emergencies and support higher authority when called upon to react. It is unreasonable to think that the document will provide the answers for every

problem, but it will provide a starting point for the assessment, recovery and restoration of infrastructure problems in a quick logical manner.

APPENDIX A
KEY TERMS AND WARNINGS

HOSTILE ACTION

Alarm System - A series of bells, sirens, whistles, horns or other devices used to warn of impending action or safety. Most alarm systems consist of the following conditions

All Clear - No impending threat.
Condition Yellow - Probable attack.
Condition Read - Imminent attack or attack in progress.
Condition Black - After attack.

Mission-Oriented Protective Posture (MOPP) Operations - MOPP levels are determined by the threat of chemical, nuclear, or biological weapons use by the enemy.

THREATCON ALPHA : A general warning of possible terrorist activity, the nature and extent of which are unpredictable.

THREATCON BRAVO : This condition is declared when there is increased and more predictable threat of terrorist activity even though no particular target is identified.

THREATCON CHARLIE : This condition is declared when an incident occurs or when intelligence is received indicating that some form of terrorist action against installations and personnel is imminent.

THREATCON DELTA : A terrorist attack has occurred or intelligence has been received that terrorist actions against a specific location is likely.

HURRICANES

Tropical Disturbance - First stage of unstable weather that may develop into a hurricane.

Tropical Depression - The tropical activity has a low pressure area that could become a hurricane. Highest wind speed is 38 mph.

Tropical Storm - Wind speed of 39-73 mph. Low pressure area is well-defined by rotating circulation.

Tropical Storm Watch - An announcement that a tropical storm poses a threat within 36 hours.

Tropical Storm Warning - Tropical storm is expected within 24 hours.

Hurricane - Once a tropical storm's constant wind speed reach reaches 74 mph.

Hurricane Watch - An announcement that a hurricane is expected within 36 hours.

Hurricane Warning - A hurricane is expected within 24 hours, however, because of uncertainty of hurricane path the time could be only hours.

CAT	WIND VELOCITY	BARO PRESSURE	STORM SURGE	DAMAGE
ONE	74-95 MPH	28.94" or more	4-5'	Minimal
TWO	96-110 MPH	28.5"-28.93"	6-8'	Moderate
THREE	110-130 MPH	27.91"-28.49"	9-12'	Extensive
FOUR	131-155 MPH	27.17"-27.90"	13-16'	Extreme
FIVE	OVER 155 MPH	Less than 27.17"	Over 18'	Catastrophic

Source: National Hurricane Center

TORNADO

Tornado Watch - Tornado, severe thunderstorms, or both are possible.

Tornado Warning - Tornado sighted.

WINTER STORM

Traveler's Advisory - An announcement issued when enough ice and snow are expected to hinder travel but the anticipated conditions are not serious enough to require warnings.

Freezing Rain - Forecast when expected rain is likely to freeze as soon as it strikes the ground, creating a coating of ice on roads and walkways.

Sleet - Small particles of ice mixed with rain.

Winter Storm Warning - Heavy snow, sleet or freezing rain are expected.

Winter Storm Watch - Severe winter weather possible.

Blizzard Warning - Heavy snow and winds of 35 mph or more are expected.

Severe Blizzard Warning - Very heavy snow is expected with winds over 45 mph, temperatures below 10 degrees and visibility reduced.

NAVAL FACILITIES ENGINEERING COMMAND

RADM Jack E. Buffington, CEC, USN
Commander, NAVFAC
Chief of Civil Engineers

RADM Robert M. Gallen, CEC, USN
Vice Commander, NAVFAC
Dep. Chief of Civil Engineers

NAVAL FACILITIES ENGINEERING COMMAND HEADQUARTERS

Commander
Naval Facilities Engineering Command
200 Stovall St.
Alexandria, VA 22332-2300
(703) 325-0400
DSN 221-0400

Commander
Chief of Civil Engineers
RADM Jack E. Buffington, CEC, USN

Vice Commander
Deputy Chief of Civil Engineers
RADM Robert M. Gallen, CEC, USN

Deputy Commander for Facilities Acquisition
CAPT Thomas E. Gunn, CEC, USN

Deputy Commander for Public Works
CAPT William R. Mitchum III, CEC, USN

Deputy Commander for Environment
Mr. William A. Quade

Deputy Commander for Manpower and Organization
Assistant Chief of Civil Engineers
CAPT James L. Delker, CEC, USN

Deputy Commander for Planning
CAPT Talbot W. Bone, CEC, USN

Deputy Commander for Contracts
Mr. Paul P. Buonaccorsi

Deputy Commander for Military Readiness
CAPT Richard M. Dempsey, CEC, USN

Director of Programs and Comptroller
CAPT Louis M. Smith, CEC, USN

Counsel
Mr. Matthew K. McElhaney

Assistant Commander for Engineering and Design
Mr. Harry H. Zimmerman Jr.

Assistant Commander for Construction
CAPT Frederick R. Clements, CEC, USN

Assistant Commander for Family Housing
CAPT Robert G. Hocker Jr., CEC, USN

Assistant Commander for Research, Development, Test and Evaluation
Mr. Alton S. Bradford

Assistant Commander for Environment, Safety and Health
CAPT Alan W. Katz, CEC, USN

Assistant Commander for Public Works Centers and Departments
CAPT Edward P. Hamm, CEC, USN

Assistant Commander for Facilities Planning
CAPT Ernest C. Rushing Jr., USN

Assistant Commander for Real Estate
Mr. A. Jeffrey Roth

Construction Battalion Centers

Davisville, RI
Gulfport, MS
Port Hueneme, CA

Public Works Centers

Great Lakes, IL
Washington, DC
Norfolk, VA
Pensacola, FL
Jacksonville, FL
San Francisco Bay, CA
San Diego, CA
Pearl Harbor, HI
Guam
Yokosuka, Japan

Engineering Field Divisions

NORTHDIV	Philadelphia, PA
CHESDIV	Washington, DC
LANTDIV	Norfolk, VA
SOUTHDIV	Charleston, SC
WESTDIV	San Bruno, CA
SWDIV	San Diego, CA
PACDIV	Pearl Harbor, HI

Engineering Field Activities

EFA Midwest	Great Lakes, IL
EFA NW	Silverdale, Wa.
EFA MED	Naples, Italy

Officers in Charge of Construction

MEDPAC, Pearl Harbor, HI
Marianas, Guam
Southwest Pacific, Diego Garcia
Southwest Pacific, Singapore
Far East, Yokosuka, Japan

Naval Energy and Environmental Support Activity

Port Hueneme, CA

Naval Civil Engineering Laboratory

Port Hueneme, CA

FIELD COMMANDS

Construction Battalion Centers
Commanding Officer
Naval Construction Battalion Center
Davisville, RI 02854
CDR Robert P. Buchholz, CEC, USN
(401) 267-2193 / DSN 948-6193

Commanding Officer
Naval Construction Battalion Center
Gulfport, MS 39501
CAPT John A. Lehman, CEC, USN
(601) 8871-2201 / DSN 868-2201

Commanding Officer
Naval Construction Battalion Center
Port Hueneme, CA 93041
CAPT David J. Nash, CEC, USN
(805) 982-4741 / DSN 551-4741

Engineering Field Divisions
Commanding Officer, Northern Division
Naval Facilities Engineering Command
10 Industrial Highway Mail Stop 82
Lester, PA 19113
CAPT William A. Waters, CEC, USN
(215) 595-0600 / DSN 443-0600

Commanding Officer, Chesapeake Division
Naval Facilities Engineering Command
Washington Navy Yard
Washington, DC 20374
CAPT Richard E. Brown, CEC, USN
(202) 433-3300 / DSN 288-3300

Commander, Atlantic Division
Naval Facilities Engineering Command
Norfolk, VA 23511
RADM Thomas A. Dames, CEC, USN
(804) 444-9500 / DSN 564-9503

Commanding Officer, Southern Division
Naval Facilities Engineering Command
P.O. Box 190010
North Charleston, SC 29419
CAPT John N. Rever, CEC, USN
(803) 743-0700 / DSN 563-0700

Commander, Western Division
Naval Facilities Engineering Command
P.O. Box 727
San Bruno, CA 94066
CAPT Robert L. Moeller, CEC, USN
(415) 244-2000 / DSN 494-2000

Commanding Officer
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, CA 92132
CAPT Thomas C. Crane, CEC, USN
(619) 532-2317 / DSN 522-2317

Commander, Pacific Division
Naval Facilities Engineering Command
Pearl Harbor, HI 96860
RADM G. Brian Estes, CEC, USN
(808) 474-1141

Engineering Field Activities
Commanding Officer
Engineering Field Activity, Midwest
Building 1A
Great Lakes, IL
CAPT James P. Kovalcik, CEC, USN
(708) 688-6895 / DSN 792-6895

Commanding Officer
Engineering Field Activity
Northwest
3505 NW Anderson Hill Rd.
Silverdale, WA 93883
CAPT Thomas J. Tanner
(206) 476-8666 / DSN 439-8666

Commanding Officer
Engineering Field Activity
Mediterranean
PSC 810 Box 51
FPO AE 09619-0051
CAPT John E. Jones, CEC, USN
011-39-81-509-7500

Naval Energy and Environmental Support Activity
Commanding Officer
Naval Energy and Environmental Support Activity
Port Hueneme, CA 93043
CDR Joseph W. Taylor, CEC, USN
(805) 982-5751 / DSN 551-5751

Naval Civil Engineering Laboratory
Commanding Officer
Naval Civil Engineering Laboratory
Port Hueneme, CA 93043
CAPT Joseph C. Penell, CEC, USN
(805) 982-1393 / DSN 551-1393

Public Works Centers
Commanding Officer
Navy Public Works Center, Bldg. 1A
Great Lakes, IL 60088
CAPT James P. Kovalcik, CEC, USN
(708) 688-6895 / DSN 792--6895

Commanding Officer
Public Works Center
Washington Navy Yard
Washington, DC 20374
CAPT John S. Ahl, CEC, USN
(202) 433-7085 / DSN 228-7085

Commanding Officer
Navy Public Works Center
Norfolk, VA 23511
CAPT Stanley R. Holm, CEC, USN
(804) 444-7141 / DSN 564-7141

Commanding Officer
Navy Public Works Center
Naval Air Station, Bldg. 3560
Pensacola, FL 32508
CAPT Allan W. Johnson, CEC, USN
(904) 452-4331 / DSN 922-4331

Commanding Officer
Navy Public Works Center
NAS Jacksonville
Jacksonville, FL 32212
CAPT Gary E. Monroe, CEC, USN
(904) 772-5132 / DSN 942-5133

Commanding Officer
Navy Public Works Center
San Francisco Bay
P.O. Box 24003
Oakland, CA 94623
CAPT Peter W. Marshall, CEC, USN
(510) 466-3848 / DSN 859-3848

Commanding Officer
Navy Public Works Center
Naval Base
San Diego, CA 92136
CAPT Christopher J. Guld, CEC, USN
(619) 556-2199 / DSN 526-2199

Commanding Officer
Navy Public Works Center
Pearl Harbor, HI 96860
CAPT James A. Rispoli, CEC, USN
(808) 471-3926

Commanding Officer
U.S. Navy Public Works Center
Guam
FPO San Francisco, CA 96630
CAPT Arthur Corsano, CEC, USN
(617) 331-5100 / DSN 339-5100

Commanding Officer
Box 13
U.S. Navy Public Works Center
Yokosuka, Japan
FPO AP 96349-3100
CAPT David B. Shepard, CEC, USN
011-81-311-734-7713 / DSN 243-7711

Commander, USACE and Chief of Engineers

Pulaski Building
20 Massachusetts Ave., NW
Washington, DC 20314-1000
Tel. (202) 272-0008

MG PETER J. OFFRINGA
Deputy Chief of Engineers

LTG ARTHUR E. WILLIAMS
Chief of Engineers

MG JOHN F. SOBKE
Assistant Chief of Engineers

CSM JAMES SKELLION
COMMAND SERGEANT MAJOR

BG (P) STANLEY G. GENEGA
DIRECTOR, CIVIL WORKS

BG (P) PAT M. STEVENS
DIR., MILITARY PROGRAMS

MR. BARRY J. FRANKEL
DIRECTOR, REAL ESTATE

MR. CARY JONES
DEP. ASSISTANT CHIEF OF ENGINEERS

BG GERALD C. "JED" BROWN
DIRECTOR, ARMY ENVIRONMENTAL PROGRAM, ACE

MR. RALPH LOSCHIALPO
DIRECTOR, HUMAN RESOURCES

MR. HERBERT KENNON
DEP. DIRECTOR, CIVIL WORKS

MR. ALLEN M. CARTON
DEP. DIRECTOR, MILITARY PROGRAMS

MR. LESTER EDELMAN
CHIEF COUNSEL

DR. ROBERT B. OSWALD
DIRECTOR, RESEARCH AND DEVELOPMENT

MR. JOHN F. WALLACE
DIR., RESOURCE MANAGEMENT

MAJOR SUBORDINATE COMMANDS

NORTHEAST DIVISION
424 TRAPELO RD.
WALTHAM, MA 02254
(617) 647-8220

NORTH CENTRAL DIVISION
P.O. BOX 1159
CINCINNATI, OH 45201
(513) 684-3002

SOUTHEAST DIVISION
RM. 464
77 FORSYTHE ST., SW
ATLANTA, GA 30335
(404) 331-6711

SOUTH CENTRAL DIVISION
P.O. BOX 80
VICKSBURG, MS 39180
(601) 634-5750

WESTERN DIVISION
P.O. BOX 2870
PORTLAND, OR 97208
(503) 326-3700

DISTRICTS

BALTIMORE
P.O. BOX 1715
BALTIMORE, MD 21203

BOSTON
424 TRAPELO RD.
WALTHAM, MA 02254
(617) 647-8220

PHILADELPHIA
WANAMAKER BLDG.
100 PENN SQ.E.
PHILADELPHIA, PA 19107

NEW YORK
26 FEDERAL BLDG.
RM. 2108
NEW YORK, NY 10278

PACIFIC OCEAN DIVISION
BLDG. 230
FT. SHAFTER, HI 96858
(808) 438-1500

DISTRICTS

ALASKA
P.O. BOX 898
ANCHORAGE, AK 99506

FAR EAST
APO AP 96206-0610

JAPAN
APO AP 96343-0061

DISTRICTS

LOUISVILLE
P.O. BOX 59
LOUISVILLE, KY 40201

OMAHA
215 N. 17 TH ST.
OMAHA, NE 68102

PITTSBURGH
FEDERAL BLDG.
1000 LIBERTY AVE.
RM. 810
PITTSBURGH, PA 15222

ST. PAUL
180 E. KELLOGG BLVD.
RM. 1421
ST. PAUL, MN 55101

BUFFALO
1776 NIAGARA ST.
BUFFALO, NY 14207

CHICAGO
111 N. CANAL ST.
RM. 600
CHICAGO, IL 60606

DETROIT
P.O. BOX 1027
DETROIT, MI 48231

KANSAS CITY
601 E. 12TH ST.
KANSAS CITY, MO 64106

HUNTINGTON
502 EIGHTH ST.
HUNTINGTON, WV 25701

NASHVILLE
P.O. BOX 1070
NASHVILLE, TN 37202

ROCK ISLAND
CLOCK TOWER BLDG.,
BOX 2004
ROCK ISLAND, IL 61204

ST. LOUIS
1222 SPRING ST.
ST. LOUIS, MO 63103

TRANSATLANTIC DIVISION
P.O. BOX 2250
WINCHESTER, VA 22601
(703) 668-4019

DISTRICT

EUROPE
APO NEW YORK
09757-5301

DISTRICTS

JACKSONVILLE
P.O. BOX 4970
JACKSONVILLE, FL 32232

NORFOLK
803 FRONT ST.
NORFOLK, VA 23510

MOBILE
P.O. BOX 2288
MOBILE, AL 36628

CHARLESTON
P.O. BOX 919
CHARLESTON, SC 29402

SAVANNAH
P.O. BOX 889
SAVANNAH, GA 31402

WILMINGTON
P.O. BOX 1890
WILMINGTON, NC 28402

HUNTSVILLE DIVISION
P.O. BOX 1600
HUNTSVILLE, AL 35807
(205) 955-5460

DISTRICTS

FORT WORTH
P.O. BOX 17300
FORT WORTH, TX 76102

NEW ORLEANS
P.O. BOX 60267
NEW ORLEANS, LA 70160

TULSA
P.O. BOX 61
TULSA, OK 74121

GALVESTON
P.O. BOX 1229
GALVESTON, TX 77553

LITTLE ROCK
P.O. BOX 867
LITTLE ROCK, AR 72203

MEMPHIS
167 N. MAIN ST.
RM. B-202
MEMPHIS, TN 38103

VICKSBURG
P.O. BOX 60
VICKSBURG, MS 39180

DISTRICTS

LOS ANGELES
P.O. BOX 2711
LOS ANGELES, CA 90053

SACRAMENTO
1325 J ST.
SACRAMENTO, CA 95814

SEATTLE
P.O. BOX 3755
SEATTLE, WA 98124

ALBUQUERQUE
P.O. BOX 1580
ALBUQUERQUE, NM 87103

PORTLAND
P.O. BOX 2946
PORTLAND, OR 97204

SAN FRANCISCO
211 MAIN ST.
SAN FRANCISCO, CA 94105

WALLA WALLA
BLDG. 613, CITY-COUNTY AIRPORT
WALLA WALLA, WA 99362

LABORATORIES

COLD REGIONS RESEARCH & ENGINEERING LAB
72 LYME ROAD
HANOVER, NH 03755
(603) 646-4200

TOPOGRAPHIC ENGINEERING CENTER
BUILDING 2592
FT. BELVOIR, VA 22060
(703) 355-2600

CONSTRUCTION ENGINEERING RESEARCH LAB
P.O. BOX 9005
CHAMPAIGN, IL 61826
(217) 373-7201

WATERWAYS EXPERIMENT STATION
3909 HALLS FERRY RD.
VICKSBURG, MS 39180
(601) 634-2513

(As of Feb. 1, 1993)



HQ USAF

PENTAGON, WASHINGTON, D.C. 20330-5130



Maj. Gen. Ahearn



B.G. McCarthy



Gary Flora

Directorate of Engineering and Services AF/LEE

DIRECTOR	M/GEN JOSEPH A. AHEARN	(202) 697-9221
DEP DIRECTOR	B/GEN JAMES E. McCARTHY	(202) 697-7366
ASSOC DIRECTOR	MR. GARY S. FLORA	(202) 697-7366

AIR FORCE REGIONAL CIVIL ENGINEERS
- ATLANTA
- DALLAS
- SAN FRANCISCO
- BMS NORTON AFB

AIR FORCE ENGINEERING & SERVICES CENTER (TAFB)
CMDR. COL ROY G. KENNINGTON
(904) 283-6101

LIAISON DIVISION
COL WILLIAM R. CRAIG III
695-7744

DEPUTY DIRECTOR FOR CONSTRUCTION
MR. J.B. COLE
694-9498

DEPUTY DIRECTOR FOR PROGRAMS
VACANT

INSTALLATION DEVELOPMENT DIVISION
COL DONALD J. THOMAS
697-7799

ENVIRONMENTAL QUALITY DIVISION (BAFB)
COL RAYMOND A. MALINOVSKY
767-4178

PROGRAMS DIVISION
COL TODD L. STEWART
697-0457

FAMILY HOUSING DIVISION
COL THOMAS N. GOODE
695-0236

BAFB = Bolling AFB, DC
TAFB = Tyndall AFB, FL

PLANS DIVISION
COL JAMES K. SCOTT
695-5701

REAL ESTATE DIVISION (BAFB)
MR. A.R. JONKERS
767-4275

AIR FORCE ENGINEERING AND SERVICES CENTER
TYNDALL AFB, FL 32403



Col Roy G. Kennington

Commander
Col Roy G. Kennington
6101

Vice Commander
Col Henry G. Ashrurm
6103

AV 523-xxxx
(904) 283-xxxx

Support Staff

Computer Applications and Development
Col Gibson
6419

Readiness
Col Andrews
6124

Housing and Services
Col Murphy
6169

Engineering and Services Lab
Col Hanes
6309

Engineering and Services Program Office
Col Morgan
6231

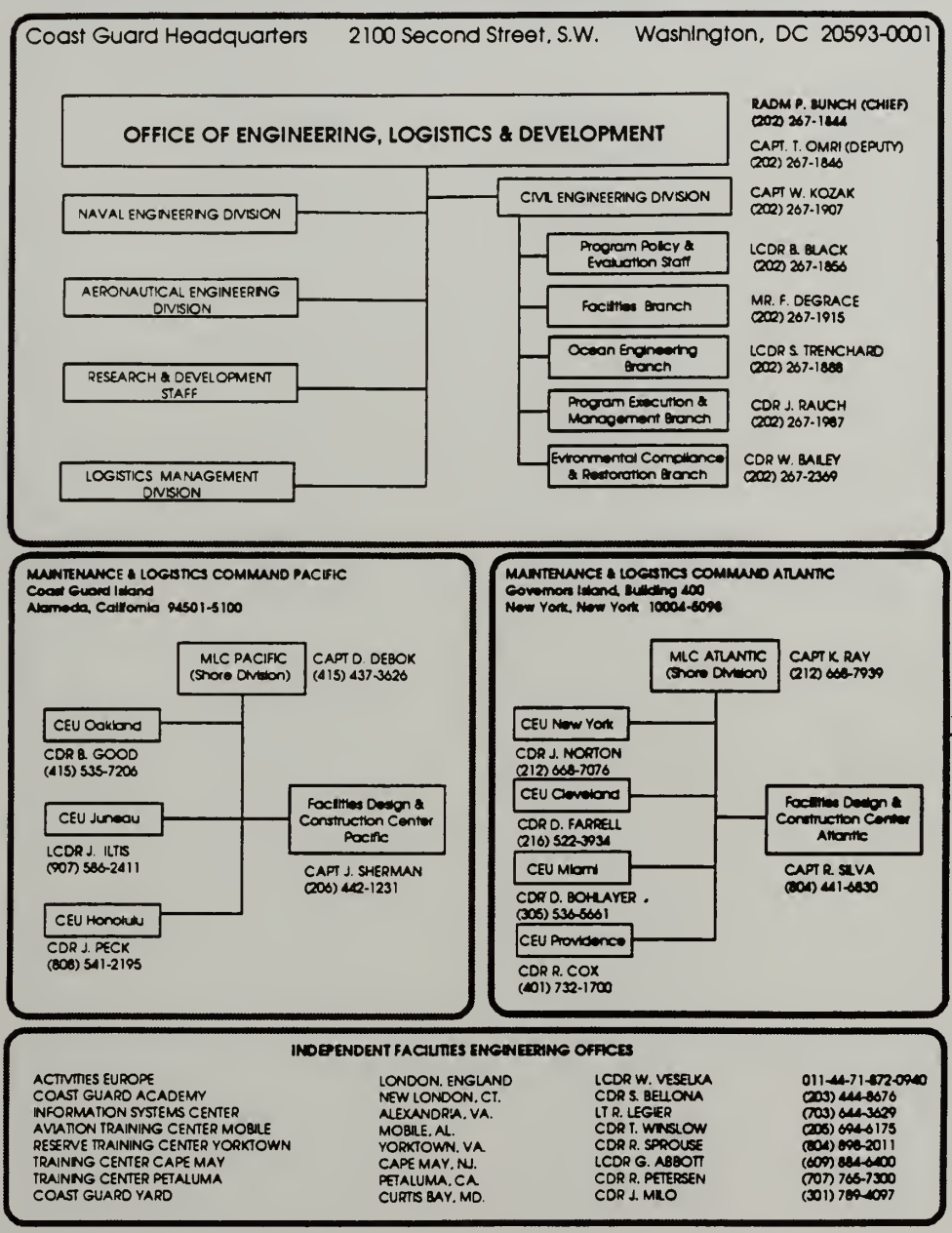
Operations and Readiness
Lt Col Robbins
6373

Civil Engineering Maintenance, Inspection, and Repair Teams
- Tyndall AFB, FL
- Dover AFB, DE
- Travis AFB, CA
- Kelly AFB, TX
- Peterson AFB, CO

Construction Cost Management
Ms Gregory
6230

Coast Guard Civil Engineering Organization (The Military Engineer, 1993)

COAST GUARD CIVIL ENGINEERING ORGANIZATION



Emergency Capability Listing (The Military Engineer, 1993)

ALABAMA

Alabama Emergency Management
Clanton, AL 35045-5160
Contact: Phillip Hicks
Phone: (205) 280-2200
FAX: (205) 280-2495

Blackburn & Associates, Inc.
Lowndesboro, AL 36752
Contact: Lynn Davis Blackburn
Phone: (205) 265-0206
FAX: (205) 265-0207
Capabilities: E F I T 1 3 12

Blount Inc.
Montgomery, AL 36101-0949
Contact: Danny Creamer
Phone: (205) 244-4000
FAX: (205) 271-8790
Capabilities: E F I T 1 3 12

Brown & Root Inc.
Mobile, AL 36616
Contact: Jim Gorrell
Phone: (205) 450-7295
FAX: (205) 450-7247
Capabilities: F H 1 3 7 10

Carr & Associates Engineers, Inc.
Pelham, AL 35124
Contact: Ben F. Carr, Jr.
Phone: (205) 664-8498
FAX: (205) 664-9685
Capabilities: P 1 L T 1 3 5

Ebasco Services Inc.
Huntsville, AL 35805
Contact: Jack McIlrath
Phone: (205) 830-4100
FAX: (205) 830-1991
Capabilities: H 1 O R 5 8 10

Hayes, Seay, Mattern & Mattern, Inc.
Mobile, AL 36691
Contact: Donald M. Loper
Phone: (205) 343-9713
FAX: (205) 343-9717
Capabilities: F 1 T 3 5

ISSI Unexploded Ordnance, Inc.
Huntsville, AL 35805
Contact: Robert T. Fay, Sr.
Phone: (205) 536-4466
FAX: (205) 536-4959
Capabilities: H I K T 3 7 9 10

P.E. LaMoreaux & Associates, Inc.
Tuscaloosa, AL 35403
Contact: Robert W. Caswell
Phone: (205) 752-5543
FAX: (205) 752-4043
Capabilities: F H L O 1 3 10

Law Companies Group, Inc.
Huntsville, AL 35801
Contact: G. Patrick Harris
Phone: (205) 535-9755
FAX: (205) 535-9756
Capabilities: E F H L 1 3 10

Livingston Design Inc.
Birmingham, AL 35205
Contact: La Hayne Livingston
Phone: (205) 933-0833
FAX: (205) 933-6718
Capabilities: 3

Mid-South Testing, Inc.
Decatur, AL 35601
Contact: Ron Stroup or Vernon Lane
Phone: (205) 350-0846
FAX: (205) 350-9507
Capabilities: H O 3 10

Ogden Env. & Energy
Huntsville, AL 35805
Contact: Richard Grace
Phone: (205) 539-3016
FAX: (205) 539-3074
Capabilities: H O 3 10

Proctor/Davis/Ray Engineers, Inc.
Huntsville, AL 35801
Contact: James T. ("Tom") Cunningham
Phone: (205) 551-0222
FAX: (205) 551-0436
Capabilities: F T 3

Pugh, Wright & Assoc., Inc.
Decatur, AL 35602
Contact: Joel N. Pugh
Phone: (205) 353-3937
FAX: (205) 350-2285
Capabilities: F T 3

RUST International Corp.
Birmingham, AL 35242
Contact: Lawrence G. Michalove
Phone: (205) 995-7537
FAX: (205) 995-6740
Capabilities: T H 3 5 7 10

Sherlock, Smith and Adams, Inc.
Montgomery, AL 36111
Contact: Roland H. Vaughan
Phone: (205) 263-6481
FAX: (205) 264-4509
Capabilities: 1 2 3 12

Universal Construction Co., Inc.
Huntsville, AL 35824
Contact: J.R. Glover
Phone: (205) 461-0568
FAX: (205) 461-6731
Capabilities: F T 3 5

Walk, Haydel & Associates, Inc.
Mobile, AL 36609
Contact: George K. Chandler, PE
Phone: (205) 344-4744
FAX: (205) 344-4963
Capabilities: F H 1 O 1 2 3 10

Wescope Corporation
Huntsville, AL 35801
Contact: Robert R. Wessels
Phone: (205) 539-6139
FAX: (205) 539-2011
Capabilities: F T 3 5 7

Roy F. Weston, Inc.
Auburn, AL 36830
Contact: Vish Varma
Phone: (205) 826-6100
FAX: (205) 826-8232
Capabilities: E F H 1 O 2 3 5 7 10

ALASKA

Alaska Division of Emergency Services
Fort Richardson, AK 99505-5570
Contact: Ervin Paul Martin
Phone: (907) 428-7000
FAX: (907) 428-7009

Anchorage Municipal Light & Power
Anchorage, AK 99501
Contact: Bob Price (Col., USAF, Ret.)
Phone: (907) 263-5275
FAX: (907) 276-2961
Capabilities: E 1 S 12

Coffman Engineers
Anchorage, AK 99501-3577
Contact: Harold Hollis
Phone: (907) 276-6664
FAX: (907) 276-5042
Capabilities: E S 3

Dames & Moore
Anchorage, AK 99518
Contact: Michael L. Foster, PE
Phone: (907) 562-3366
FAX: (907) 562-1297
Capabilities: E H L O 1 3 5 10

Dowl Engineers
Anchorage, AK 99503
Contact: William P. Hamm
Phone: (907) 562-2000
FAX: (907) 563-3953
Capabilities: E H L S 1 3 5 10

Tryck, Nyman, Hayes, Inc.
Anchorage, AK 99501
Contact: Ted Trueblood
Phone: (907) 279-0543
FAX: (907) 276-7679
Capabilities: E F 1 3

USKH, INC.
Anchorage, AK 99503-2709
Contact: Leo von Scheben, Jr.
Phone: (907) 276-4245
FAX: (907) 258-4653
Capabilities: E F H 3 5

ARIZONA

Arizona Division of Emergency Services
Phoenix, AZ 85008
Contact: William D. Lockwood
Phone: (602) 231-6245
FAX: (602) 231-6231

ATL, Inc.
Phoenix, AZ 85017
Contact: David P. Hayes
Phone: (602) 241-1097
FAX: (602) 234-0699
Capabilities: E H 1 3

Caruso Turley Scott, Inc.
Phoenix, AZ 85008
Contact: Elizabeth Scarano
Phone: (602) 275-3999
FAX: (602) 392-0949
Capabilities: E F 1 1 3 5

Celia Barr Associates
Tucson, AZ 85711
Contact: Fredric M. Funk
Phone: (602) 750-7474
FAX: (602) 750-7470
Capabilities: F 1 2 3 4

Greiner, Inc.
Phoenix, AZ 85020
Contact: Ronald Ewing
Phone: (602) 275-5400
FAX: (602) 943-1891
Capabilities: F T 1 3 5

Greiner, Inc.
Tucson, AZ 85705
Contact: Charles Larson, PE
Phone: (602) 887-1800
FAX: (602) 887-8438
Capabilities: F T 1 3 5

Mathews Engineering & Architecture, Inc.
Phoenix, AZ 85008
Contact: William D. Mathews, PE
Phone: (602) 244-2664
FAX: (602) 275-3220
Capabilities: E F 1 3 5 9

Monrad Engineering, Inc., Consulting Electrical Engineers
Tucson, AZ 85719
Contact: Lawrence E. Monrad
Phone: (602) 884-0045
FAX: (602) 884-0048
Capabilities: F I 3 12

Roberts/Dinsmore Associates
Phoenix, AZ 85008
Contact: Frank H. Roberts
Phone: (602) 275-6830
FAX: (602) 275-4331
Capabilities: E F I T 3 5

SEA Engineers, Inc.
Phoenix, AZ 85015

Contact: Tom Lewczycki
Phone: (602) 257-4699
FAX: (602) 257-0106
Capabilities: E F L T 1 3 5 12

SEC Donohue
Phoenix, AZ 85016
Contact: Larry Hanson
Phone: (602) 279-3541
FAX: (602) 279-1334
Capabilities: E F H L 1 3 10 12

SFC Engineering Company
Phoenix, AZ 85044
Contact: Fred Corey
Phone: (602) 438-2200
FAX: (602) 431-9562
Capabilities: E F L T 1 3

Sundt Corp.
Tucson, AZ 85714
Contact: John E. Carlson, Sr.
Phone: (602) 748-7555
FAX: (602) 750-6516
Capabilities: E F L 1 3

ARKANSAS

Office of Emergency Services
Conway, AR 72032
Contact: James Lee Witt
Phone: (501) 329-5601
FAX: (501) 327-8047

Garver & Garver, P.A.
Little Rock, AR 72203
Contact: Ken Wilson
Phone: (501) 376-3633
FAX: (501) 372-8042
Capabilities: 1 3

CALIFORNIA

Governor's Office of Emergency Services
Sacramento, CA 95832-1499
Contact: Richard Andrews, Ph.D.
Phone: (916) 427-4990
FAX: (916) 427-4215

Barrett Consulting Group
Menlo Park, CA 94028
Contact: William P. Simons
Phone: (415) 854-7090
FAX: (415) 854-7724
Capabilities: E F 1 3

Bissell & Karn/Greiner
Pleasanton, CA 94588
Contact: Richard Karn or Petro Ruggeri
Phone: (510) 463-2000
FAX: (510) 463-0510
Capabilities: E F L 1 3 5

Boyle Engineering Corp.
Newport Beach, CA 92658
Contact: Henry W. Haeseker
Phone: (714) 476-3400
FAX: (714) 721-7141
Capabilities: E F T 1 3

Braccia & Associates
Orinda, CA 94563
Contact: Anthony A. Braccia
Phone: (510) 254-8570
FAX: (510) 254-0295
Capabilities: E F I 1 3 5 8

Michael Brandman Associates
Santa Ana, CA 92705
Contact: Thomas E. Smith, Jr., AICP
Phone: (714) 250-5555
FAX: (714) 250-5556
Capabilities: 1 3 5 10

Brown and Caldwell Consultants
San Diego, CA 92108
Contact: George Khoury
Phone: (619) 528-9090
FAX: (619) 528-9199
Capabilities: F H O 3 10

Brown and Caldwell Consultants
Sacramento, CA 95814
Contact: Perry Schafer
Phone: (916) 444-0123
FAX: (916) 444-8437
Capabilities: H R 3 5 10 12

Brown & Root Services, Inc.
Santa Maria, CA 93437-0369
Contact: Vic Bouquet
Phone: (805) 346-2651
FAX: (805) 928-9737
Capabilities: E F 1 L 3 5 7 12

Brugge & Piercy Associates
Sacramento, CA 95864
Contact: Robert O. Brugge
Phone: (916) 482-8940
Capabilities: E F 1 L 3 4 5 12

BSI Consultants, Inc.
San Diego, CA 92127
Contact: Daniel York
Phone: (619) 451-6100
FAX: (619) 451-1694
Capabilities: E F L 1 3

John Carollo Engineers
Walnut Creek, CA 94598
Contact: Carl Gentry
Phone: (510) 932-1710
FAX: (510) 930-0208
Capabilities: E F 3

Cash & Associates Engineers
Long Beach, CA 90801
Contact: Elliott H. Boone
Phone: (714) 895-2072
FAX: (714) 895-1291
Capabilities: E 3

J. C. Chang & Associates, Inc.
Torrance, CA 90501
Contact: Jerry C. Chang
Phone: (310) 212-7644
FAX: (310) 212-5272
Capabilities: E F H 1 1 2 3 5

Converse Consultants, Inland Empire
Redlands, CA 92374
Contact: Steven C. Helfrich
Phone: (714) 796-0544
FAX: (714) 796-7675
Capabilities: E H L 1 3 10

Dames & Moore
Sacramento, CA 95826
Contact: Kenneth A. Strom
Phone: (916) 387-8800
FAX: (916) 387-0802
Capabilities: E H L O 3 10

Degenkolb Associates, Engineers
San Francisco, CA 94104-1394
Contact: Thomas Wosser
Phone: (415) 392-6952
FAX: (415) 981-3157
Capabilities: E F 1 T 1 3 5

Delta Construction Co., Inc.
Sacramento, CA 95827
Contact: Norman R. Brown
Phone: (916) 364-0292
FAX: (916) 364-7641
Capabilities: 1 3

Dewante & Stowell
Sacramento, CA 95814
Contact: Randolph H. Dewante
Phone: (916) 447-3261
FAX: (916) 447-4649
Capabilities: E F 3

A. J. Diani Construction Co., Inc.
Santa Maria, CA 93454
Contact: Robert Diani
Phone: (805) 925-9533
FAX: (805) 922-9983
Capabilities: E F H O 1 3 5 10

Dutra Construction Co., Inc.
Rio Vista, CA 94571
Contact: Doug Comstock
Phone: (707) 374-6339
FAX: (707) 374-6965
Capabilities: E F L T 1 3

Earth Technology Corporation
Long Beach, CA 90802
Contact: Steve Scott
Phone: (310) 495-4449
FAX: (310) 426-0666
Capabilities: E F H O 3 5 10

Engineering-Science, Inc.
Pasadena, CA 91124
Contact: Dr. A. W. Loven
Phone: (818) 440-6000
FAX: (818) 440-6195
Capabilities: E F H I 3 10

Environmental Science & Engineering, Inc.
Concord, CA 94520
Contact: Chuck Biagi
Phone: (510) 685-4053
FAX: (510) 685-5323
Capabilities: H 3 8 10

GEOCON Inc.
San Diego, CA 92121-2974
Contact: David F. Leake
Phone: (619) 558-6900
FAX: (619) 558-6159
Capabilities: E H L 1 3 10

Geomatrix Consultants, Inc.
San Francisco, CA 94111
Contact: Karen Ball
Phone: (415) 434-9400
FAX: (415) 434-3216
Capabilities: E H L O 1 3

Ben C. Gerwick, Inc.
San Francisco, CA 94111
Contact: Paul E. Bach
Phone: (415) 398-8972
FAX: (415) 433-8789
Capabilities: E 1 L R 1 3 5 7

Global Associates
San Ramon, CA 94583
Contact: Charlie Lamb, Sr.
Phone: (510) 275-9010
FAX: (510) 275-9392
Capabilities: H O T 3 5 7 8

Greiner, Inc.
Santa Ana, CA 92705
Contact: Melford Placilla, PE
Phone: (714) 556-9260
FAX: (714) 755-0577
Capabilities: E F T 1 3 5

Hall & Foreman, Inc.
Tustin, CA 92680
Contact: Roger W. Watson, P.L.S.
Phone: (714) 544-3404
FAX: (714) 544-3155
Capabilities: E F L T 1 3 5 12

Harza-Kaldveer
Oakland, CA 94621
Contact: Peter Kaldveer
Phone: (510) 568-4001
FAX: (510) 568-2205
Capabilities: E H L O 3 5 10

Holmes & Narver, Inc.
Orange, CA 92668
Contact: Bruce R. Toro
Phone: (714) 567-2771
FAX: (714) 567-2649
Capabilities: E F H L 1 3 5 7

IT Corporation
Torrance, CA 90505
Contact: Jim Manoney
Phone: (310) 378-9933
FAX: (310) 791-2587
Capabilities: H O 3 10

Jaykim Engineers, Inc.
Sacramento, CA 95834
Contact: Roland Miller
Phone: (916) 924-6618
FAX: (916) 924-6670
Capabilities: E H I O 1 3 7 10

Jaykim Engineers, Inc.
Diamond, CA 91765
Contact: Roland Miller
Phone: (714) 861-3844
FAX: (714) 860-3170
Capabilities: E H I O 1 3 7 10

Johnson Western Gunite Company
San Leandro, CA 94577
Contact: Larry Totten
Phone: (510) 568-8112
FAX: (510) 568-1601
Capabilities: E F I L 1 3 9 10

Keller & Gannon
San Francisco, CA 94103
Contact: Robert A. Falciani
Phone: (415) 621-1199
FAX: (415) 864-3681
Capabilities: E F H T 3 5 10 12

Kleinfelder, Inc.
Walnut Creek, CA 94596
Contact: Edward E. Rinne
Phone: (510) 938-5610
FAX: (510) 938-5419
Capabilities: H L O 1 3 5 10

Law/Crandall, Inc.
San Diego, CA 92121
Contact: John R. Theissen, G.E.
Phone: (619) 458-9379
FAX: (619) 458-0541
Capabilities: E F H L 3 5 10

Leach Mounce Architects
Ventura, CA 93003
Contact: Howard Leach
Phone: (805) 656-3522
FAX: (805) 658-1926
Capabilities: E F I L 3

Leedshill-Herkenhoff, Inc.
San Diego, CA 92121
Contact: Charles R. Bras
Phone: (619) 455-7787
FAX: (619) 455-0029
Capabilities: E F 3 5

Leighton and Assoc., Inc.
Woodland Hills, CA 91367
Contact: Frederick Gebhardt
Phone: (818) 587-9470
FAX: (818) 587-9484
Capabilities: E F H L 3 5 10

Leighton and Assoc., Inc.
Irvine, CA 92714-4906
Contact: Dr. Jalal Vakili
Phone: (714) 250-1421
FAX: (714) 250-1114
Capabilities: E H L O 1 3 10 12

Libby Engineers
San Diego, CA 92120
Contact: James R. Libby
Phone: (619) 283-5424
FAX: (619) 284-3533
Capabilities: E F T 1 3

Lintvedt, McColl & Assoc.
La Mesa, CA 91941
Contact: Gary Lintvedt
Phone: (619) 460-3112
FAX: (619) 460-1539
Capabilities: E F L 1 3 5

The Mark Group, Construction Engineers, Inc.
Pleasant Hill, CA 94523
Contact: Philip Ruby
Phone: (510) 946-1055
FAX: (510) 946-9813
Capabilities: E H O 3 10

Metcalf & Eddy, Inc.
Redwood City, CA 94065
Contact: Roy Fedotoff
Phone: (415) 591-9300
FAX: (415) 591-3917
Capabilities: K F H 1 3 5 10

Metcalf & Eddy, Inc.
San Diego, CA 92101
Contact: Charles Pound
Phone: (619) 233-7855
FAX: (619) 233-9780
Capabilities: K F H 1 3 5 10

M&T Agra, Inc.
Anaheim, CA 92807
Contact: Brian Constant
Phone: (714) 779-2591
FAX: (714) 779-8377
Capabilities: E H L 3 5 10

O'Brien-Kreitzberg & Assoc., Inc.
San Francisco, CA 94105
Contact: Terry Micheau
Phone: (415) 777-0188
FAX: (415) 777-3023
Capabilities: E F L T 3 5 7

Panko Architects
San Mateo, CA 94402
Contact: Stanley E. Panko
Phone: (415) 571-9100
FAX: (415) 571-9302
Capabilities: E F I L 1 3 5 9

The Ralph M. Parsons Company
Pasadena, CA 91124
Contact: Charles H. Neubauer
Phone: (818) 440-2310
FAX: (818) 440-2703
Capabilities: E F I O 1 3 5 7

Perini Corporation
San Francisco, CA 94111-1422
Contact: John E. Perini
Phone: (415) 981-8880
FAX: (415) 392-7271
Capabilities: E F H I S

PRC Env. Mgmt., Inc.
San Francisco, CA 94105
Contact: Daniel T. Chow
Phone: (415) 543-4880
FAX: (415) 543-5480
Capabilities: H 3 10

Professional Service Industries, Inc.
San Francisco, CA 94549
Contact: Paul Bazilwich, Jr.
Phone: (510) 284-3070
FAX: (510) 284-3154
Capabilities: E F H I 3 5 10

Radian Corporation
Irvine, CA 92714
Contact: Richard R. Beauregard
Phone: (714) 261-8611
FAX: (714) 261-6505
Capabilities: H O R 3 5 10

Rutherford & Chekene, Consulting Engineers
San Francisco, CA 94107
Contact: Peter E. Bank
Phone: (415) 495-4222
FAX: (415) 546-7536
Capabilities: E 3

RWR-Pascoe Engineering, Inc.
Irvine, CA 92718
Contact: Lucien A. Pascoe
Phone: (714) 753-4777
FAX: (714) 753-1588
Capabilities: E F 1 2 3 12

Sandis, Humber, Jones
Salinas, CA 93901
Contact: Edward Oyama
Phone: (408) 757-2927
FAX: (408) 757-6876
Capabilities: E F L 1 3 5

Soil Stabilization Products Co.
Merced, CA 95340
Contact: George Randolph
Phone: (800) 523-9992
FAX: (209) 383-7849
Capabilities: E F L T 1 3 7 12

The Tanzmann Assoc.
Los Angeles, CA 90013-1820
Contact: Virginia Tanzmann, FAIA
Phone: (213) 625-1734
FAX: (213) 625-1804
Capabilities: E F I 3

3DI
Sacramento, CA 95814
Contact: Chuck Kluenker
Phone: (916) 447-7600
FAX: (916) 443-8906
Capabilities: E F I T 3 5

Travis, Verdugo, Curry & Assoc.
San Diego, CA 92108
Contact: Kevin Canty
Phone: (619) 291-2800
FAX: (619) 291-0613
Capabilities: E F 1 3

Tudor Engineering Company
Oakland, CA 94612
Contact: John Williams
Phone: (510) 419-6114
FAX: (510) 419-6110
Capabilities: E I 1 3 5 12

Tudor Engineering Company
Irvine, CA 92714
Contact: Donald J. Hoel
Phone: (714) 833-2176
FAX: (714) 833-8779
Capabilities: E F H L 1 3 9 10

URS Consultants, Inc.
Sacramento, CA 95834
Contact: Gary Jandegian
Phone: (916) 929-2346
FAX: (916) 929-7236
Capabilities: E F H T 1 3 5 10

URS Consultants, Inc.
San Francisco, CA 94111
Contact: R. Martin Czarnecki
Phone: (415) 774-2700
FAX: (415) 398-1904
Capabilities: E F H T 1 3 5 10

Van Dell and Assoc., Inc.
Irvine, CA 92714
Contact: Terry Hartman
Phone: (714) 474-1400
FAX: (714) 261-8482
Capabilities: E F 1 3 5

Van Houten Consultants, Inc.
Petaluma, CA 92101
Contact: Gary E. Van Houten
Phone: (707) 762-1132
FAX: (707) 762-1179
Capabilities: E H L 3 10

Vanir Constr. Management, Inc.
San Diego, CA 92101
Contact: Wayne Goodermote
Phone: (619) 525-2072
FAX: (619) 231-2918
Capabilities: E 3

Versar, Inc.
Alameda, CA 94501
Contact: Dan R. Ledford
Phone: (510) 748-6444
FAX: (510) 748-6441
Capabilities: H I O R 10

Roy F. Weston, Inc.
Woodland Hills, CA 91367
Contact: John Aecardi
Phone: (818) 596-6900
FAX: (818) 596-6970
Capabilities: E F H I O 2 3 5 7 10

Winzler & Kelly, Consulting Engineers
San Francisco, CA 94105
Contact: Theodore H. Purcell
Phone: (415) 546-9900
FAX: (415) 546-9007
Capabilities: E F H L 1 3 9 12

Woodward-Clyde Consultants
Oakland, CA 94607
Contact: Ulrich Luscher
Phone: (510) 874-3200
FAX: (510) 874-3268
Capabilities: E L O 3 5 10

Woodward-Clyde Consultants
San Diego, CA 92108-2901
Contact: Ed Gabrielson
Phone: (619) 294-9400
FAX: (619) 293-7920
Capabilities: E H L O 3 5 10

COLORADO

Office of Emergency Management
Golden, CO 80401-3997
Contact: Leonard A. Boulas
Phone: (303) 273-1622
FAX: (303) 273-1795

Durrant Fliekinger, Inc.
Colorado Springs, CO 80903
Contact: Tracy Nelson
Phone: (719) 633-3003
FAX: (719) 633-2265
Capabilities: E F I T 3 5

Durrant Fliekinger, Inc.
Denver, CO 80209
Contact: Dennis L. Thompson
Phone: (303) 377-2900
FAX: (303) 377-0621
Capabilities: E F T 3

EMC Engineers, Inc.
Denver, CO 80227
Contact: Eric Young, PE
Phone: (303) 988-2951
FAX: (303) 988-2527
Capabilities: E F H T 3 5 10 12

GE Government Services
Fort Carson, CO 80913
Contact: J. E. McDavid
Phone: (719) 540-9460
FAX: (719) 527-9339
Capabilities: H O S 1 3 7 10

Global Associates-Falcon AFB
Falcon AFB, CO 80912-5000
Contact: Russ Grant
Phone: (719) 550-4970
FAX: (719) 683-3945
Capabilities: R S H I 3 10 7 12

RBD, Inc. Engineering Consultants
Ft. Collins, CO 80525
Contact: Ted A. Borstad
Phone: (303) 226-4955
FAX: (303) 226-4971
Capabilities: F I 3

United Engineers & Constructors
Denver, CO 80217
Contact: Susan L. Massihzadeh, PE
Phone: (303) 843-2385
FAX: (303) 843-2034
Capabilities: E F H I I 3 5 7

URS Consultants, Inc.
Englewood, CO 80111
Contact: John D. Chmelir
Phone: (303) 796-9700
FAX: (303) 796-2221
Capabilities: E F H T I 3 5 10

Roy F. Weston, Inc.
Denver, CO 80228-1842
Contact: Mike Witt
Phone: (303) 980-6800
FAX: (303) 980-1622
Capabilities: E F H I O 2 3 5 7 10

Roy F. Weston, Inc.
Lakewood, CO 80228
Contact: Dr. Michael E. Witt
Phone: (303) 980-6800
FAX: (303) 980-1622
Capabilities: H 3 5 10

Wilson & Company
Colorado Springs, CO 80903
Contact: Ward K. Cooper
Phone: (719) 520-5800
FAX: (719) 520-0108
Capabilities: E F T I 3

CONNECTICUT

Office of Emergency Management
Hartford, CT 06105
Contact: James S. Neale, III
Phone: (203) 566-3180/4338
FAX: (203) 247-0664

Greiner, Inc.
Wallingford, CT 06492
Contact: Stuart Stolfi, PE
Phone: (203) 265-6741
FAX: (203) 265-6748
Capabilities: F T I 3 5

Storch Engineers
Rocky Hill, CT 06067
Contact: Michael D'Altilio
Phone: (203) 529-7727
FAX: (203) 721-7213
Capabilities: F H O I 3 10

DIST. OF COLUMBIA

Office of Emergency Preparedness
Washington, DC 20009
Contact: Stephen E. Rickman
Phone: (202) 727-3150
FAX: (202) 673-2290

Frank E. Basil, Inc.
Washington, DC 20005
Contact: Mr. Dru J. Blaszcak
Phone: (202) 835-1203
FAX: (202) 835-1310
Capabilities: E F I T 3 5

Cannon
Washington, DC 20007
Contact: William C. Baker
Phone: (202) 337-6022
FAX: (202) 337-6029
Capabilities: E F 3

Marine Spill Response Corp.
Washington, DC 20005
Contact: Alan D. Breed
Phone: (202) 408-5900
FAX: (202) 371-0401
Capabilities: O 10 7 5 2

The Ralph M. Parsons Company
Washington, DC 20005
Contact: Robert M. Gogal
Phone: (202) 775-6010
FAX: (202) 775-6005
Capabilities: E F I O 1 3 5 7

RTKL Associates, Inc.
Washington, DC 20036
Contact: Rose M. Dela Vega
Phone: (202) 833-4400
FAX: (202) 887-5186
Capabilities: E F I T 3 5 12

3M Company Federal Systems
Washington, DC 20005
Contact: Russ Gauitt
Phone: (202) 331-6988
FAX: (202) 331-6901
Capabilities: E F H O 3 4 5 10

Waste Management Env. Svcs. Inc.
Washington, DC 20036
Contact: Paul Kavanaugh
Phone: (202) 467-4480
FAX: (202) 872-8983
Capabilities: F H O R 1 3 10

Roy F. Weston, Inc.
Washington, DC 20024
Contact: Tim Daty
Phone: (202) 646-6856
FAX: (202) 646-6210
Capabilities: E F H I O 2 3 5 7 10

FLORIDA

Division of Emergency Management
Tallahassee, FL 32399
Contact: [redacted] JOE MIERS 487-4418
Phone: (904) 488-1900
FAX: (904) 488-6250

Aerial Cartographics of America
Orlando, FL 32809
Contact: Cornell Clapp
Phone: (407) 851-7880
FAX: (407) 855-8250
Capabilities: E F 5

Blasland, Bouck & Lee
Orlando, FL 32822
Contact: Doyle E. Cottrell, PE
Phone: (407) 856-5502
FAX: (407) 240-6320
Capabilities: F H I O 3 1 0

Bullock Tice Assoc. Architects, Inc.
Pensacola, FL 32501
Contact: John Tice
Phone: (904) 434-5444
FAX: (904) 432-5208
Capabilities: F H I R 3

Delta Research Corp.
Niceville, FL 32578
Contact: Leslie A. Rose
Phone: (904) 897-5380
FAX: (904) 897-5388
Capabilities: F 3 5

Earth Resources Corporation
Ocoee, FL 34761
Contact: Norman J. Abramson
Phone: (407) 877-0877
FAX: (407) 877-3622
Capabilities: H I 3 10

ENPAC Corporation
Jacksonville, FL 32256
Contact: Chris Hilty
Phone: (904) 448-8870
FAX: (904) 448-8869
Capabilities: H 3 10

Env. Science & Engineering
Gainsville, FL 32602
Contact: George Anatos
Phone: (800) 874-7872
FAX: (904) 332-0507
Capabilities: H O 10

EOD World Services, Inc.
Ft. Walton, FL 32547
Contact: E. L. McDaniel
Phone: (904) 864-3454
FAX: (904) 864-1052
Capabilities: H I 10

Gee & Jenson Engineers Architects Planners, Inc.
W. Palm Beach, FL 33409
Contact: Donald L. Goddeau
Phone: (407) 683-3301
FAX: (407) 697-3892
Capabilities: F T I 3 5

Global Assoc.-Mayport Naval Complex
Mayport Naval Comp., FL 32228
Contact: Bill Schneider
Phone: (904) 247-0330
FAX: (904) 247-0502
Capabilities: E F I O 3 7 10 12

Greiner, Inc.
Tampa, FL 33607

Contact: Fred Wslker
Phone: (813) 286-1711
FAX: (813) 286-6587
Capabilities: F H L O 1 3 5 10

Hansen Lind Meyer Inc.
Orlando, FL 32803
Contact: Karen Saslaw
Phone: (407) 422-7061
FAX: (407) 422-7066
Capabilities: E F 1 T 3

H.G. Hardens & Son, Inc.
Panama City, FL 32404
Contact: Robert A. Hodges
Phone: (904) 874-1500
FAX: (904) 871-4669
Capabilities: F O 1 3

Johnson Controls World Services Inc.
Cape Canaveral, FL 32920
Contact: Paul V. Roundy, III
Phone: (407) 784-7100
FAX: (407) 784-7146
Capabilities: E F H 1 3 4 7 12

Law Companies Group
Pensacola, FL 32526
Contact: James Tucci
Phone: (904) 944-9772
FAX: (904) 944-9463
Capabilities: H O 3 10

Law Engineering, Inc.
Jacksonville, FL 32211
Contact: Jim Horton
Phone: (904) 396-5173
FAX: (904) 396-5703
Capabilities: H L O T 1 10 3 12

LIVS Associates
Coral Gables, FL 33134
Contact: Hector Vergara
Phone: (305) 443-2933
FAX: (305) 448-3748
Capabilities: E F 1 T 3

Metcalf & Eddy
Sunrise, FL 33325
Contact: W. Prentiss Taylor
Phone: (305) 846-8611
FAX: (305) 846-8885
Capabilities: E F H O 3 5 10 12

Morse Diesel
Marco Island, FL 33937
Contact: George Alter
Phone: (813) 642-0304
FAX: (813) 642-4086
Capabilities: E F T 1 3 5 6

Post, Buckley, Schuh & Jernigan
Homestead, FL 33030
Contact: Robert S. Harris
Phone: (800) 733-7275
FAX: (305) 245-9208
Capabilities: F T H O 1 3 5 10

Reynolds, Smith and Hills, Inc.
Jacksonville, FL 32256
Contact: Henry Luke
Phone: (904) 279-2114
FAX: (904) 279-2491
Capabilities: F 1 3 5 10

C. Vargas & Associates, Ltd.
Jacksonville, FL 32211
Contact: Clark Vargas, PE
Phone: (904) 725-7131
FAX: (904) 725-4749
Capabilities: F H O 3 10

ZHA Inc.
Orlando, FL 32801
Contact: F. Donald Naegele
Phone: (407) 825-3587
FAX: (407) 825-3591
Capabilities: E F T 1 3

GEORGIA

Georgia Emergency Management Agency
Atlanta, GA 30316
Contact: Gary W. McConnell
Phone: (404) 624-7000
FAX: (404) 624-7205

Castell, Marks International
Atlanta, GA 30339
Contact: Chistopher P. Soffe
Phone: (404) 951-2921
FAX: (404) 933-9508
Capabilities: E F 1 T 1 3 5 7

Heery International, Inc.
Atlanta, GA 30367
Contact: Richard D. Scharf
Phone: (404) 881-9880
FAX: (404) 875-1283
Capabilities: F 1 T 3 12

Hoffman & Company, Inc.
Smyrna, GA 30080
Contact: Irv Hoffman
Phone: (404) 435-2241
FAX: (404) 435-3017
Capabilities: F H L O 5 10

Lowe Engineers
Atlanta, GA 30328
Contact: William T. Bersson
Phone: (404) 399-6400
FAX: (404) 393-9406
Capabilities: F H O T 1 2 3 5

Nix, Mann and Associates
Atlanta, GA 30309
Contact: Stuart Aynsley
Phone: (404) 873-2300
FAX: (404) 892-5823
Capabilities: F 1 T 2 5

Southeastern Power Administration
Elberton, GA 30635
Contact: Jim Lloyd
Phone: (706) 283-9924
FAX: (706) 283-9928
Capabilities: F 12

Tremco, Inc.
Lilburn, GA 30226
Contact: Richard N. Garwood
Phone: (800) 899-8736
FAX: (404) 923-8053
Capabilities: F T 3 7

HAWAII

Department of Defense
Honolulu, HI 96816-4495
Contact: Roy C. Price, Sr.
Phone: (808) 734-2161
FAX: (808) 737-4150

Global Associates - Hickam AFB
Honolulu, HI 96820
Contact: Vinve Stubbs
Phone: (808) 422-4931
FAX: (808) 423-0070
Capabilities: E F H L 3 6 7 10

Jas. W. Glover
Hilo, HI 96720
Contact: Stanley T. Doi
Phone: (808) 935-0871
FAX: (808) 961-9237
Capabilities: E F L 1 3

Harding Lawson Associates
Aiea, HI 96701
Contact: George How
Phone: (808) 486-6009
FAX: (808) 486-7184
Capabilities: E F H L 1 3 10

Lincolne Scott & Kohloss Inc.
Honolulu, HI 96813
Contact: Fred Kohloss
Phone: (808) 536-1737
FAX: (808) 537-5829
Capabilities: E F H 1 3 5 10 12

Maguire Group Inc.
Honolulu, HI 96814
Contact: K. Rappolt
Phone: (808) 949-2047
FAX: (808) 949-4804
Capabilities: E F 1 3

Parsons Hawaii
Honolulu, HI 96813
Contact: Lou Lopez
Phone: (808) 523-5464
FAX: (808) 545-7838
Capabilities: E F H I 1 3 5 7

IDAHO

Bureau of Disaster Services
Boise, ID 83720
Contact: Darrell G. Waller
Phone: (208) 334-3460
FAX: (208) 334-2322

CH2M Hill, Inc.
Boise, ID 83707
Contact: P. Dennis Smith
Phone: (208) 345-5310
FAX: (208) 345-5313
Capabilities: E F H O 1 3 10 12

Power Engineers, Inc.
Hailey, ID 83333
Contact: Tim Mason
Phone: (208) 788-3456
FAX: (208) 788-2082
Capabilities: E F O T 2 3 10 12

ILLINOIS

Illinois Emergency Management Agency
Springfield, IL 62706
Contact: John Plunk
Phone: (217) 782-2700
FAX: (217) 782-2589

Berns, Clancy and Associates, P.C.
Urbana, IL 61801
Contact: Thomas B. Berns
Phone: (217) 348-1144
FAX: (217) 384-3355
Capabilities: F O T 1 3

Booker Associates, Inc.
Fairview Hts., IL 62208
Contact: Daniel D. Moses, PE
Phone: (618) 397-3000
FAX: (618) 397-9847
Capabilities: E F T 1 3 5

Caterpillar Inc.
Peoria, IL 61629
Contact: Jim McMillan
Phone: (309) 675-6938
FAX: (309) 675-6951
Capabilities: E L S T 1 3 4 12

Daily & Associates, Engineers, Inc.
Champaign, IL 61820
Contact: W. C. Chenault, Jr.
Phone: (217) 352-4169
FAX: (217) 352-0085
Capabilities: F H 1 O 1 3 5 10

FGM Architects-Engineers
Oak Brook, IL 60521
Contact: Edward J. Rosenberger
Phone: (708) 574-8300
FAX: (708) 574-9292
Capabilities: E F 1 3

Hanson Engineers Inc.
Springfield, IL 62703
Contact: Sergio "Satch" Pecori
Phone: (217) 788-2450
FAX: (217) 788-2503
Capabilities: E F H L 1 2 3 10

Horner & Shifrin, Inc.
Belleville, IL 62223
Contact: Thomas G. Thompson
Phone: (618) 397-1065
FAX: (618) 397-1056
Capabilities: E F L T 1 3 5

Insituform Midwest Inc.
Lemont, IL 60439
Contact: Terry Soenen
Phone: (800) 633-6333
FAX: (608) 365-6786
Capabilities: E F H 3 9 10 12

KJWW Engineering Consultants
Rock Island, IL 61201
Contact: Vernon M. Wegerer
Phone: (309) 788-0673
FAX: (309) 786-5967
Capabilities: E I T 3

Lester B. Knight & Assoc., Inc.
Chicago, IL 60661
Contact: Stephen C. Mitchell
Phone: (312) 346-2100
FAX: (312) 346-9725
Capabilities: E F I 1 3 5 12

Kudrna & Associates, Ltd.
Chicago, IL 60606
Contact: Frank Kudrna
Phone: (312) 738-1522
FAX: (312) 738-9792
Capabilities: 1 3 7 10

Missman, Stanley & Associates, P.C.
Rock Island, IL 61201
Contact: Kevin L. Koski
Phone: (309) 788-7644
FAX: (309) 788-7691
Capabilities: E F L T 1 3 5 7

Parsons De Leuw, Inc.
Chicago, IL 60661
Contact: Red Beebe
Phone: (312) 930-5140
FAX: (312) 930-0018
Capabilities: E F I T 1 3

Stanley Consultants, Inc.
Chicago, IL 60631
Contact: Dale S. Duffala
Phone: (312) 693-9741
FAX: (312) 693-7690
Capabilities: H 3 4

Roy F. Weston, Inc.
Vernon Hills, IL 60061
Contact: Jack Thorsen
Phone: (708) 918-4102
FAX: (708) 918-4055
Capabilities: E F H I O 2 3 5 7 10

Wight & Company
Downers Grove, IL 60515
Contact: Michael E. Pyrz, PE
Phone: (708) 969-7000
FAX: (708) 969-7979
Capabilities: E H O T 1 3 5 10

IOWA

Iowa Emergency Mgmt. Division
Des Moines, IA 50319
Contact: Ellen M. Gordon
Phone: (515) 281-3231
FAX: (515) 281-7539

Durrant Construction Mgmt. Inc.
Duhuque, IA 52004
Contact: G.L. Guy, Greg Hutchinson
Phone: (319) 583-9131
FAX: (319) 583-9078
Capabilities: E F I T 3 5

Durrant Engineers, Inc
Dubuque, IA 52004
Contact: Charles R. Marsden, PE
Phone: (319) 583-9131
FAX: (319) 557-9078
Capabilities: F I T 1 2 3 12

Indeco, Inc.
Bettendorf, IA 52722
Contact: Paul H. Schwartz
Phone: (319) 359-5451
FAX: (319) 359-4318
Capabilities: F H L T

The Schemmer Assoc., Inc., A.E.P.
Davenport, IA 58201
Contact: Dale Christensen
Phone: (319) 391-0885
FAX: (319) 391-8635
Capabilities: E F L T 1 3 5 7

Stanley Consultants, Inc.
Muscatine, IA 52761
Contact: Lynn Pruitt
Phone: (319) 264-6600
FAX: (319) 264-6658
Capabilities: E F H I 1 3 10 12

KANSAS

Division of Emergency Preparedness
Topeka, KS 66601
Contact: Dan E. Karr
Phone: (913) 266-1400
FAX: (913) 266-1129

CDM Federal Programs Corporation
Lenexa, KS 66214
Contact: William A. Kosk, PE
Phone: (913) 492-8181
FAX: (913) 492-5619
Capabilities: H 10

Gossen Livingston Associates, Inc.
Wichita, KS 67202
Contact: Thomas R. Gossen, AIA/PE
Phone: (316) 265-9367
FAX: (316) 265-5646
Capabilities: I T 3

HTX International, Inc.
Manhattan, KS 66502
Contact: Eric T. Dillinger
Phone: (913) 537-4852
FAX: (913) 537-4307
Capabilities: 3 5 7

Kerr Conrad Graham Assoc., Inc.
Praire Village, KS 66208
Contact: Albert Kerr
Phone: (913) 362-5833
FAX: (913) 362-0837
Capabilities: E F I T 1 3

Konza Constr. Co., Inc.
Junction City, KS 66441
Contact: John A. Trygg
Phone: (913) 762-2995
FAX: (913) 762-5230
Capabilities: E F L S 1 3 6 7

Lutz, Daily & Brain Consulting Engineers
Overland Park, KS 66202
Contact: Thomas F. Lutz, PE
Phone: (913) 831-0833 .
FAX: (913) 831-1569
Capabilities: E F I T 1 3 4 12

Smith & Boucher, Inc.
Overland Park, KS
Contact: Daniel P. O'Grady
Phone: (913) 345-2127
FAX: (913) 345-0617
Capabilities: 3 5

KENTUCKY

Kentucky Disaster and Emergency Services
Frankfort, KY 40601-6168
Contact: James M. Everett
Phone: (502) 564-8682
FAX: (502) 564-8614

Howard K. Bell Consulting Engineers, Inc.
Hopkinsville, KY 42241
Contact: Robert J. Cope, II
Phone: (502) 886-5466
FAX: (502) 886-5122
Capabilities: E F H 3 10 12

CTI Environmental
Louisville, KY 40299
Contact: Darroll L. Hawkins, PE
Phone: (502) 266-7655
FAX: (502) 266-7743
Capabilities: F H O 3 5 10

Fuller, Mossbarger, Scott & May Engineers, Inc.
Lexington, KY 40511-2011
Contact: W.A. Mossbarger
Phone: (606) 233-0574
FAX: (606) 254-4800
Capabilities: E F H L 1 3 10

Ogden Env. & Energy Services
Louisville, KY 40299
Contact: David Dries, PE
Phone: (502) 267-0700
FAX: (502) 267-5900
Capabilities: F H L O 3 5 10 12

PDR Engineers, Inc.
Lexington, KY 40503
Contact: Michael Cooper
Phone: (606) 223-8000
FAX: (606) 224-1025
Capabilities: E H L T 1 3 10 12

Proctor/Davis/Ray Engineers Inc.
Louisville, KY 40202
Contact: David B. Servis
Phone: (502) 584-5555
FAX: (502) 584-5696
Capabilities: E L 1 2 3 5

E.R. Ronald & Associates
Louisville, KY 40203
Contact: Ronald Dockery
Phone: (502) 635-5291
FAX: (502) 636-0878
Capabilities: E F I L T 3 5 12

Watkins and Associates, Inc.
Lexington, KY 40504
Contact: James E. Maggard
Phone: (606) 278-4903
FAX: (606) 277-7903
Capabilities: F 1 3 5

LOUISIANA

Office of Emergency Preparedness
Baton Rouge, LA 70804-4217
Contact: Bill J. Croft
Phone: (504) 342-5470
FAX: (504) 342-5471

Berger Barnard & Thomas, Inc.
Baton Rouge, LA 70896
Contact: Emmett Mayer, Jr.
Phone: (504) 927-8323
FAX: (504) 924-6461
Capabilities: F 1 3 12

Brown & Butler, Inc.
Baton Rouge, LA 70806
Contact: Charles L. Costner
Phone: (504) 924-0235
FAX: (504) 926-1687
Capabilities: F 1 3 5

Burk-Kleinpeter, Inc.
New Orleans, LA 70119

Contact: George C. Kleinpeter, Jr.
Phone: (504) 486-5901
FAX: (504) 488-1714
Capabilities: E F L T 1 3 5

John E. Chance & Associates, Inc.
Lafayette, LA 70506
Contact: Wade Jumonville
Phone: (318) 268-3291
FAX: (318) 26803272
Capabilities: 3

Gotech, Inc.
Baton Rouge, LA 70810
Contact: Rhaoul A. Guillaume
Phone: (504) 766-5358
FAX: (504) 766-5879
Capabilities: F L T 1 3

Frederic R. Harris, Inc.
New Orleans, LA 70113
Contact: Tony Brocato
Phone: (504) 529-4533
FAX: (504) 522-2085
Capabilities: E F I T 1 3 9 12

IT Corporation
Port Allen, LA 70767
Contact: Bob Lewis
Phone: (504) 344-8530
FAX: (504) 343-8673
Capabilities: H 1 O 10

Modjeski & Masters, Inc.
New Orleans, LA 70130
Contact: W. B. Conway
Phone: (504) 524-4344
FAX: (504) 561-1229
Capabilities: E F I L 1 3 5

Waldemar S. Nelson & Co., Inc.
New Orleans, LA 70130
Contact: Tom Wells
Phone: (504) 523-5281
FAX: (504) 523-4587
Capabilities: F H 1 O 3

NTB, Inc.
Shreveport, LA 71101
Contact: Albert J. Bergamini, PE
Phone: (318) 226-9199
FAX: (318) 221-1208
Capabilities: E F L T 1 3 12

Parsons Brinckerhoff Quade & Douglas
Metairie, LA 70002
Contact: Dale K. McDaniel
Phone: (504) 830-0070
FAX: (504) 830-0071
Capabilities: E F T 1 3 5

Pensco
Lafayette, LA 70506
Contact: A.L. Reaux
Phone: (318) 233-9914
FAX: (318) 233-9916
Capabilities: F 1 3

Pyburn & Odom, Inc.
Baton Rouge, LA 70820
Contact: Tom Iglehart, V.P.
Phone: (504) 766-6330
FAX: (504) 769-7680
Capabilities: F 1 3 10

URS Consultants, Inc.
Metairie, LA 70002
Contact: Vincent Provinza
Phone: (504) 837-6326
FAX: (504) 831-8860
Capabilities: E F H O 1 3 5 10

Walk, Haydel & Associates, Inc.
New Orleans, LA 70130
Contact: William E. Read
Phone: (504) 586-8111
FAX: (504) 522-0554
Capabilities: E F H 1 1 3 5 7

MAINE

Maine Emergency Mgmt. Agency
Augusta, ME 04333
Contact: David D. Brown
Phone: (207) 289-4080
FAX: (207) 289-4079

T.Y. Lin International
Falmouth, ME 04105
Contact: Henry Cygan
Phone: (207) 781-4721
FAX: (207) 781-4753
Capabilities: E F L S 1 3 5

MARYLAND

Emergency Management Agency
Pikesville, MD 21208
Contact: David A. McMillion
Phone; (301) 486-4422
FAX: (301) 486-1867

Henry Adams, Inc.
Baltimore, MD 21204
Contact: Charles A. Meyer
Phone: (301) 296-6500
FAX: (301) 296-3156
Capabilities: E F I T 3 12

Allied Contractors, Inc.
Baltimore, MD 21202
Contact: J. Jay Pecora, PE
Phone: (301) 539-6727
FAX: (301) 332-4594
Capabilities: E F H L 1 3 7 10

AWD Technologies, Inc.
Rockville, MD 20853
Contact: Alan J. Sheperd
Phone: (301) 948-0040
FAX: (301) 948-6094
Capabilities: H O 3 5 10

Boyle Engineering Corporation
Landover, MD 20785-5326
Contact: Stephen J. Spano
Phone: (301) 925-2700
FAX: (301) 925-4783
Capabilities: 3

Century Engineering, Inc.
Towson, MD 21204
Contact: Richard O. Beall
Phone: (410) 823-8070
FAX: (410) 823-2184
Capabilities: E F H L 1 3 5

Energy Systems Engineering, Inc.
Kensington, MD 20895
Contact: Jose A. Reig
Phone: (301) 946-6160
FAX: (301) 946-5746
Capabilities: F 3 12

Greiner, Inc.
Timonium, MD 21093
Contact: Ed Trojan, PE
Phone: (410) 561-0100
FAX: (410) 561-9649
Capabilities: F T 1 3 5

KCI Technologies, Inc.
Baltimore, MD 21286
Contact: Jack Kinstlinger
Phone: (410) 321-5500
FAX: (410) 583-1760
Capabilities: E F H O 1 3 10 12

Metcalf & Eddy
Chevy Chase, MD 20815
Contact: Marilyn C. Bracken
Phone: (301) 654-4965
FAX: (301) 652-0817
Capabilities: E F H O 1 3 5 10

Purdum and Jeschke
Baltimore, MD 21202
Contact: Cay G. Weinel, Jr.
Phone: (410) 837-0194
FAX: (410) 837-3431
Capabilities: F 1 3

RJN Environmental Associates , Inc.
College Park, MD 20740
Contact: R. B. Fernandez, PE
Phone: (301) 864-5400
FAX: (301) 864-4908
Capabilities: E F I T 2 3 5 7

RTKL Associates, Inc.
Baltimore, MD 21202
Contact: Harold L. Adams, FAIA
Phone: (410) 528-8600
FAX: (410) 385-2455
Capabilities: E F I T 3 5 12

Rummel Klepper & Kahl
Baltimore, MD 21217
Contact: Robert J. Halbert, PE
Phone: (410) 728-2900
FAX: (410) 728-2992
Capabilities: F H 10

Scharf-Godfrey, Inc.
Bethesda, MD 20814
Contact: Robin S. Godfrey
Phone: (301) 657-8620
FAX: (301) 656-4217
Capabilitles: 3 5

Sheladia Associates, Inc.
Rockville, MD 20850
Contact: Col. Paul J. Theuer
Phone: (301) 590-3939
FAX: (301) 948-7174
Capabilities: E F H L 1 3 7 10

SSM/Spotts, Stevens & McCoy Inc.
Baltimore, MD 21286
Contact: John Hendrick, PE
Phone: (410) 494-0500
FAX: (410) 296-3580
Capabilities: H 10

Stoller Stagg & Assoc., A/E/P, Inc.
Lanham, MD 20706
Contact: Eugene J. Kazmierczak
Phone: (301) 864-0096
FAX: (301) 731-0751
Capabilities: E F T 1 2 3

Wainright Engineering, Inc.
Bethesda, MD 20814
Contact: Archie B. Wainright
Phone: (301) 907-2877
FAX: (301) 907-2879
Capabilities: E F I O 1 3 5 10

Wallace, Montgomery and Associates
Lutherville, MD 20193
Contact: John Wallace, PE
Phone: (410) 494-9093
FAX: (410) 825-5714
Capabilities: E F L T 1 3 5

Whitney, Bailey, Cox & Magnani
Timonium, MD 21093
Contact: Alexander Whitney, Jr.
Phone: (301) 252-6060
FAX: (301) 561-1194
Capabilities: E F I T 1 3

MASSACHUSETTS

Massachusetts Emergency Management Agency
Framingham, MA 01701-0317
Contact: A. David Rodham
Phone: (508) 820-2000
FAX: (508) 820-2030

Architectural Resources Cambridge
Cambridge, MA 02138
Contact: Colin L.M. Smith, FAIA
Phone: (617) 547-2200

FAX: (617) 547-7222
Capabilities: 3

Bryant Associates, Inc.
Boston, MA 02114
Contact: Jack D. Bryant
Phone: (617) 248-0300
FAX: (617) 248-0212
Capabilities: E F I 3

The BSC Group
Boston, MA 02210
Contact: Charles A. Kalauskas, PE
Phone: (617) 330-5300
FAX: (617) 345-8008
Capabilities: F 3 5

Camp Dresser & McKee Inc.
Cambridge, MA 02142
Contact: Paul Sorensen
Phone: (617) 621-8181
FAX: (617) 577-7501
Capabilities: H 10

Cole & Goyette, Inc.
Cambridge, MA 02139
Contact: Hal Goyette
Phone: (617) 491-5662
FAX: (617) 492-0856
Capabilities: F T 3 4

Fay, Spofford & Thorndike, Inc.
Lexington, MA 20173
Contact: Robert Caton
Phone: (617) 863-8300
FAX: (617) 861-6915
Capabilities: F I L T I 3 5 12

The Geotechnical Group, Inc.
Needham, MA 02194
Contact: Stan Murphy
Phone: (617) 449-6450
FAX: (617) 499-1283
Capabilities: E F H L 1 3 5 10

Howard Needles Tammen & Bergendoff
Boston, MA 02199
Contact: Gordon H. Slaney, Jr.
Phone: (617) 267-6710
FAX: (617) 236-1233
Capabilities: F 1 3 5

Kiewit Construction Company
Southborough, MA 01772
Contact: Bob Hebeler
Phone: (508) 485-1761
FAX: (508) 485-7499
Capabilities: E F L T 1 3

Paul E.K. Lu & Associates
Belmont, MA 02178
Contact: Paul E.K. Lu
Phone: (617) 484-4022
FAX: (617) 484-4076
Capabilities: E S 1 3

SAIC Engineering, Inc.
Lakeville, MA 02347
Contact: Paul King
Phone: (508) 946-3500
FAX: (508) 946-3509
Capabilities: H O R 1 3 5 10

Syska & Hennessy, Inc.
Cambridge, MA 02138
Contact: Joseph F. Manfredi
Phone: (617) 868-3500
FAX: (617) 868-8012
Capabilities: E F I 1 2 12

Universal Engineering Corporation
Boston, MA 02116
Contact: Stanley D. Elkerton
Phone: (617) 542-8216
FAX: (617) 423-0373
Capabilities: E F 3 5 10 12

Vanasse Hangen Brustlin, Inc.
Watertown, MA 02172
Contact: Charles C. Crevo
Phone: (617) 924-1770
FAX: (617) 924-2286
Capabilities: F 1 3 5

Vollmer Associates
Boston, MA 02216
Contact: Edmund J. Condon
Phone: (617) 451-0044
FAX: (617) 451-3423
Capabilities: E F L 1 3 5

Roy F. Weston, Inc.
Burlington, MA 01803
Contact: Steve Lewis
Phone: (617) 229-2050
FAX: (617) 229-0046
Capabilities: E F H I O 2 3 5 7 10

Weston & Sampson Engineers, Inc.
Peabody, MA 01960
Contact: John D. Jolls
Phone: (508) 532-1900
FAX: (508) 977-0100
Capabilities: H O 3 5 10

MICHIGAN

Emergency Management Division
Lansing, MI 48913
Contact: Sherman L. Ampey
Phone: (517) 334-5103
FAX: (517) 482-7914

BEI Associates Inc.
Detroit, MI 48226
Contact: Christopher P. Ki
Phone: (313) 963-2300
FAX: (313) 962-4269
Capabilities: E F H I 3

Luedtke Engineering Company
Frankfort, MI 49635
Contact: Kurt R. Luedtke
Phone: (616) 352-9631
FAX: (616) 352-7178
Capabilities: E F L T 1 3 7

Marine Pollution Control
Detroit, MI 48209
Contact: Michael Popa
Phone: (313) 849-2333
FAX: (313) 849-1623
Capabilities: F H I O 4 10

NTH Consultants, Ltd.
Farmington Hills, MI 48331
Contact: Jerome C. Neyer
Phone: (313) 553-6300
FAX: (313) 489-0727
Capabilities: E H I O 1 3 10

Snell Environmental Group, Inc.
Lansing, MI 48906
Contact: Pratap Rajadhyaksha
Phone: (517) 374-6800
FAX: (517) 374-7390
Capabilities: E F H O 1 3 5 10

SSOE, Inc.
Troy, MI 48084
Contact: Phillip Holmblade
Phone: (313) 643-6222-271
FAX: (313) 643-6225
Capabilities: F I T 1 3 5 12

Testing Engrs. & Consultants, Inc.
Troy, MI 48083
Contact: Susan R. Arnes
Phone: (313) 588-6200
FAX: (313) 588-6232
Capabilities: H O 3 10

Waste Management
Livonia, MI 48152
Contact: Jeff Poole
Phone: (313) 462-6900
FAX: (313) 462-6284
Capabilities: E F I T 3 10

MINNESOTA

Department of Public Safety
St. Paul, MN 55155
Contact: James Franklin
Phone: (612) 296-2233
FAX: (612) 296-1459

BKBM
Minneapolis, MN 55401
Contact: Charles Ballou
Phone: (612) 333-7101
FAX: (612) 342-9482
Capabilities: I F S T 1 2 3 5

Detector Electronics Corp.
Minneapolis, MN 55438
Contact: K. M. Klapmeier
Phone: (612) 941-5665
FAX: (612) 829-8750
Capabilities: I 4

Elk River Concrete Products, A Division of The Cretex Corp.
Minneapolis, MN 55427
Contact: Larry G. Koenig
Phone: (612) 545-7473
FAX: (612) 545-8399
Capabilities: F H L T 1 3

Howard, Needles, Tammen & Bergendoff
Minneapolis, MN 55435
Contact: Richard D. Beckman
Phone: (612) 920-4666
FAX: (612) 920-0173
Capabilities: E F L T 1 3 5

Al Johnson Construction Co.
Minneapolis, MN 55435
Contact: Douglas A. Johnson
Phone: (612) 831-8151
FAX: (612) 893-9215
Capabilities: E F L T 1 3 12

Johnson Bros. Corporation
Litchfield, MN 55355
Contact: R.W. Johnson
Phone: (612) 693-2871
FAX: (612) 693-9192
Capabilities: E F L T 1 3 5 10

Markhard
Minneapolis, MN 55401
Contact: Robert E. Swanson
Phone: (612) 420-9606
FAX: (612) 420-9584
Capabilities: E F O T 3 5

Schoell & Madson, Inc.
Minnetonka, MN 55305
Contact: Thomas Schottenbauer
Phone: (612) 546-7601
FAX: (612) 546-9065
Capabilities: F T L 1 3 10

Short-Elliott-Hendrickson, Inc.
St. Paul, MN 55110
Contact: Dave Pillateke
Phone: (612) 490-2000
FAX: (612) 490-2150
Capabilities: F L O T 1 3 5 10

MISSISSIPPI

Mississippi Emergency Management Agency
Jackson, MS 39296-4501
Contact: James E. Maher
Phone: (601) 352-9100
FAX: (601) 352-8314

JAYCOR
Vicksburg, MS 39180
Contact: Dr. Paul F. Mlakar
Phone: (601) 634-6361
FAX: (601) 638-7738
Capabilities: E F I T 1 3

Maptech Inc.
Jackson, MS 39206
Contact: Sam G. Posey

Phone: (601) 981-0112
FAX: (601) 981-2867
Capabilities: E F I T 1 3 5

Neel-Schaffer, Inc.
Jackson, MS 39225
Contact: J. Gorman Schaffer
Phone: (601) 948-3071
FAX: (601) 948-3178
Capabilities: F 1 3

Spencer Engineers, Inc.
Jackson, MS 39216
Contact: James Fitzpatrick
Phone: (601) 982-7766
FAX: (601) 982-7769
Capabilities: F T 1 3

MISSOURI

State Emergency Mangement Agency
Jefferson City, MO 65102
Contact: Richard D. Ross
Phone: (314) 751-9779
FAX: (314) 624-7966

J.S. Alberici Construction Co., Inc.
St. Louis, MO 63121
Contact: Guy Jester
Phone: (314) 261-2611
FAX: (314) 261-4225
Capabilities: E F T

Kenneth Balk & Associates, Inc.
St. Louis, MO 63141
Contact: Gary N. Schmidt
Phone: (314) 576-2021
FAX: (314) 576-2075
Capabilities: E F I S 1 3 5 7

Black & Veatch
Kansas City, MO 64114
Contact: George J. Hirt
Phone: (913) 339-8305
FAX: (913) 339-8257
Capabilities: E F I T 1 3 5 12

Booker Associates, Inc.
St. Louis, MO 63101
Contact: T. Roger Peterson
Phone: (314) 421-1476
FAX: (314) 421-1741
Capabilities: F I 1 3

Boyd, Brown, Stude, & Cambern, Chartered
Kansas City, MO 64112
Contact: John A. Boyd, Jr.
Phone: (816) 756-1484
FAX: (816) 756-0559
Capabilities: E F I T 1 3 5

Burns & McDonnell
St. Louis, MO 63127
Contact: Robert T. Berry
Phone: (314) 821-9016
FAX: (314) 821-5406
Capabilities: E F O T 3 7 12

Burns & McDonnell
Kansas City, MO 64130
Contact: Dave Ruf
Phone: (816) 333-4375
FAX: (816) 822-3413
Capabilities: E F H O 3 5 10 12

Bob Campbell & Co.
Kansas, MO 64111
Contact: Don H. Luellen
Phone: (816) 531-4144
FAX: (816) 531-8572
Capabilities: E F I T 3

Leo A. Daly Company
St. Louis, MO 63105
Contact: Guy C. Picardi
Phone: (314) 727-2700
FAX: (314) 727-3051
Capabilities: E I T 1 3 5 12

Engineering Design & Mgmt., Inc.
St. Louis, MO 63101
Contact: Bill Evers
Phone: (314) 231-5485
FAX: (314) 231-8167
Capabilities: E F 1 3 12

Foth & Van Dyke and Associates
St. Louis, MO 63146
Contact: Richard Pershall
Phone: (314) 434-5700
FAX: (314) 434-7071
Capabilities: 3 10 12

FRU-CON Engineering, Inc.
Ballwin, MO 63022
Contact: Kathleen Kresser
Phone: (314) 391-6700
FAX: (314) 391-4513
Capabilities: I T 3

Geotechnology, Inc.
St. Louis, MO 63146
Contact: W. Gary Simmons
Phone: (314) 997-7440
FAX: (314) 997-2067
Capabilities: E F H L 3 10

Law Companies
Kansas City, MO 64153
Contact: Arthur J. Whallon
Phone: (816) 891-9332
FAX: (816) 891-8644
Capabilities: E L O 3 5

Massman Construction Co.
St. Louis, MO 63127
Contact: Paul C. Schnoebelen
Phone: (314) 821-0042
FAX: (314) 821-0760
Capabilities: E F O T 1 3 5 7

O'Brien & Gere Engineers, Inc.
St. Louis, MO 63101
Contact: Dean L. Palmer
Phone: (314) 842-4550
FAX: (314) 842-3266
Capabilities: H O R S 3 7 10 12

Sverdrup Corporation
St. Louis, MO 63043
Contact: Gordon R. Pennington
Phone: (314) 436-7600
FAX: (314) 298-0045
Capabilities: E F H T 13 10 12

NEBRASKA

Nebraska Civil Defense Agency
Lincoln, NE 68508-1090
Contact: Richard L. Semm
Phone: (402) 473-1410
FAX: (402) 473-1433

Leo A. Daly
Omaha, NE 68114
Contact: James M. Ingram
Phone: (402) 391-8564
FAX: (402) 392-8111
Capabilities: E F T 3 5

Dames & Moore
Omaha, NE 68131
Contact: Dave Henney
Phone: (402) 498-8505
FAX: (402) 498-8532
Capabilities: F H O T 3 5 7 10

Farris Engineering
Omaha, NE 68154
Contact: Robert Lodes
Phone: (402) 330-5900
FAX: (402) 330-5902
Capabilities: E F I T 2 3 5 12

HGM Associates Inc.
Omaha, NE 68102
Contact: Ron Tekippe
Phone: (402) 346-7559
FAX: (402) 346-0224
Capabilities: F I 3

Johnson-Erickson-O'Brien
Wahoo, NE 68066
Contact: Michael L. Goertzen
Phone: (402) 443-4661
FAX: (402) 442-3508
Capabilities: F T 3

Kelly Industries, Inc.
Fremont, NE 68025
Contact: Steve Kneifl
Phone: (800) 228-7230
FAX: (402) 727-1363
Capabilities: F I R T 6 7

Kiewit Construction Group, Inc.
Omaha, NE 68131
Contact: Don Wrieth
Phone: (402) 342-2052
FAX: (402) 271-2918
Capabilities: E F L T 1 2 3

Kirkham, Michael & Associates
Omaha, NE 68124
Contact: James Siebken
Phone: (402) 393-5630
FAX: (402) 393-5641
Capabilities: F T 1 3

Lamp, Rynearson & Associates, Inc.
Omaha, NE 68154
Contact: Mike McMeekin
Phone: (402) 496-2498
FAX: (402) 496-2730
Capabilities: F L S T 3

Prochaska & Associates
Omaha, NE 68154
Contact: Donald F. Prochaska
Phone: (402) 334-0755
FAX: (402) 334-0868
Capabilities: F T 1 T 3 5 10 12

The Schemmer Associates Inc.
Omaha, NE 68132
Contact: Roger Wozny
Phone: (402) 493-4800
FAX: (402) 493-7951
Capabilities: E F H T 1 3 10 12

Terracon Consultants, Inc.
Omaha, NE 68130
Contact: John F. Hartwell
Phone: (402) 330-2202
FAX: (402) 330-7606
Capabilities: H 3 10

Woodward-Clyde Consultants
Omaha, NE 48154
Contact: Kenneth Nass
Phone: (402) 334-8181
FAX: (402) 334-1984
Capabilities: E H L O 3 5 10

NEW HAMPSHIRE

Governor's Office of Emerg. Mgmt.
Concord, NH 03302
Contact: George L. Iverson
Phone: (603) 271-2231
FAX: (603) 225-7341

Vanasse-Hangen-Brustlin, Inc.
Bedford, NH 03110
Contact: Frank O'Callaghan
Phone: (603) 644-0888
FAX: (603) 644-2385
Capabilities: E F L T 1 3 5

NEW JERSEY

Office of Emergency Management
West Trenton, NJ 08628-0068
Contact: Carl A. Williams
Phone: (609) 538-6050
FAX: (609) 538-0345

Applied Engineering & Tech. P.C.
Princeton, NJ 08540
Contact: Harald Greve, PE
Phone: (609) 921-8999
FAX: (609) 921-0483
Capabilities: E F I L

Louis Berger International, Inc.
East Orange, NJ 07019
Contact: Gerald P. Shea
Phone: (201) 678-1960
FAX: (201) 672-4284
Capabilities: E F H O 1 3 5 10

Burns and Roe Enterprises, Inc.
Oradell, NJ 07649
Contact: Wagih S. Andraos
Phone: (201) 265-2000-2923
FAX: (201) 967-0823
Capabilities: 1 3 12

Foster Wheeler USA Corporation
Clinton, NJ 08809
Contact: Carsten Sibbern
Phone: (908) 730-4000
FAX: (908) 730-4460
Capabilities: H 1 O 3 5 10 12

Goodkind & O'Dea, Inc.
Rutherford, NJ 07070
Contact: Donald Goldberg, PE
Phone: (201) 438-6166
FAX: (201) 438-9168
Capabilities: E F H I 1 3 5 10

Killam Associates
Millburn, NJ 07041
Contact: James G. Coe
Phone: (908) 534-4700
FAX: (908) 534-2069
Capabilities: F H O 3

John C. Morris Associates, Inc.
Shrewsbury, NJ 07702
Contact: Lawrence P. Lehmann
Phone: (908) 576-8800
FAX: (908) 842-5753
Capabilities: F H I O 3 10 12

PBS Building Systems, Inc.
Shrewsbury, NJ 07701
Contact: Elizabeth Hall
Phone: (800) 635-1249
FAX: (908) 389-1809
Capabilities: E 3 6

URS Consultants, Inc.
Paramus, NJ 07652
Contact: Francis J. Geran
Phone: (201) 262-7000
FAX: (201) 262-9199
Capabilities: E F H T 1 3 5 10

Vollmer Associates
Rochelle Park, NJ 07662
Contact: Charles S. DiMarco
Phone: (201) 587-9040
FAX: (201) 587-0444
Capabilities: E F H L 1 3 5 10

NEW MEXICO

Emergency Management Bureau
Santa Fe, NM 87504
Contact: R. Keith Lough
Phone: (505) 827-9222
FAX: (505) 827-3456

Greiner, Inc.
Albuquerque, NM 87109
Contact: John F. Thomas
Phone: (505) 345-3999
FAX: (505) 345-8393
Capabilities: E F I 1 3 4 12

Merrick & Co.
Los Alamos, NM 87544
Contact: Masoud Zarraby
Phone: (505) 662-2194
FAX: (505) 662-3851
Capabilities: F 1 L T 3 5 12

Scanlon & Assoc./KLH Engineering
Albuquerque, NM 87110
Contact: Kenneth H. Karlson
Phone: (505) 265-6941
FAX: (505) 266-2003
Capabilities: E F H L 1 3 5

NEW YORK

New York State Emergency Mgmt.
Albany, NY 12226-5000
Contact: (518) 457-2222
FAX: (518) 457-9930

Apollon Waterproofing & Restoration Corp.
Astoria, NY 11103
Contact: Michael P. Downes
Phone: (718) 728-8000
FAX: (718) 728-2565
Capabilities: E F I T 1 3

Berger, Lehman Associates, P.C.
Rye, NY 10580
Contact: Lawrence H. Lehman
Phone: (914) 967-5800
FAX: (914) 967-5263
Capabilities: 1 3

Bettigole, Andrews & Clark, Inc.
Buffalo, NY 14203
Contact: Lane K. Hardin
Phone: (716) 854-1181
FAX: (716) 854-1800
Capabilities: E F L 1 3

E. H. Brunjes & Associates
New York, NY 10016
Contact: Edwin H. Brunjes
Phone: (212) 689-0408
FAX: (212) 689-3798
Capabilities: E F 1 3 5 1

Leon D. DeMatteis Constr. Corp.
Elmont, NY 11003
Contact: A.L. DeMatteis
Phone: (516) 285-5500
FAX: (516) 285-6950
Capabilities: E F L S 3 5 7

Ehasz Glacalone Associates, P.C.
Garden City, NY 11530
Contact: Russell D. Ehasz
Phone: (516) 542-6300
FAX: (516) 542-9052
Capabilities: E F H T 1 3 5 7 11

Fanning, Phillips & Molnar
Ronkonkoma, NY 11779
Contact: Gary A. Molnar, PE
Phone: (516) 737-6200
FAX: (516) 737-2410
Capabilities: F H I O 1 3 4 10

Federman Construction Consultants
New York, NY 10016
Contact: Paula T. Federman
Phone: (212) 447-9444
FAX: (212) 447-9440
Capabilities: E F 1 1 3 5

Fogel & Associates, Inc.
New York, NY 10010
Contact: Irving M. Fogel
Phone: (212) 686-6500
FAX: (212) 684-1487
Capabilities: E F 1 3 5

Goldman Copeland Associates, P.C.
New York, NY 10011
Contact: Martin J. Goldman
Phone: (212) 929-0480
FAX: (212) 929-7251
Capabilities: E F I O 3 4 5 12

Goodkind & O'Dea, Inc.
New York, NY 10003
Contact: Gary Neuwerth, Ph.D.
Phone: (212) 505-8585
FAX: (212) 228-6029
Capabilities: E F T 1 3

Haines Lundberg Waehler
New York, NY 10003
Contact: Robert A. Djerejian
Phone: (212) 353-4600
FAX: (212) 353-4666
Capabilities: 3

Han-Padron Associates
New York, NY 10001
Contact: Dennis Padron
Phone: (212) 736-5466
FAX: (212) 629-4406
Capabilities: E F L O 1 3

Hardesty & Hanover
New York, NY 10036
Contact: Henry W. Fischer
Phone: (212) 944-1150
FAX: (212) 391-0297
Capabilities: E F 1 3

Henderson & Bodwell Consulting Engrs.
Plainview, NY 11803
Contact: Russell S. Bodwell
Phone: (516) 935-8870
FAX: (516) 935-8760
Capabilities: 2

Hendrickson Bros., Inc.
Valley Stream, NY 11582
Contact: Milton A. Hendrickson
Phone: (516) 825-3249
FAX: (516) 825-3203
Capabilities: E F S 1 3

Kittrell, Garlock and Associates
Las Vegas, NY 89103
Contact: Kathleen Richards
Phone: (702) 367-6900
FAX: (702) 367-2043
Capabilities: E F 3

Koren-DiResta Construction Co. Inc.
New York, NY 10017
Contact: Robert Welner
Phone: (212) 696-5454
FAX: (212) 696-5942
Capabilities: 1 3

Lockwood Greene Engineers
New York, NY 10001
Contact: Carmine DiLullo
Phone: (212) 613-1601
FAX: (212) 613-1747
Capabilities: E F H 1 3 5 7 12

Lockwood Kessler & Bartlett, Inc.
Syosset, NY 11791
Contact: John Lekstutis
Phone: (516) 938-0600
FAX: (516) 931-6344
Capabilities: E F O 1 2 12

Mueser Rutledge Consulting Engrs.
New York, NY 10017
Contact: Warren H. Anderson
Phone: (212) 490-7110
FAX: (212) 953-5626
Capabilities: E F L T 3 5

O'Brien-Kreitzberg
New York, NY 10036
Contact: George Fink
Phone: (212) 921-9898
FAX: (212) 391-4565
Capabilities: E F L T 3 5 7

Parsons Brinckerhoff Inc.
New York, NY 10119
Contact: James L. Lammie
Phone: (212) 465-5000
FAX: (212) 465-5096
Capabilities: E F 1 L 1 3 12

Roberts-Gordon, Inc.
Buffalo, NY 14206
Contact: John G. Berkhoudt
Phone: (716) 852-4400
FAX: (716) 852-0854
Capabilities: F 3

95

The Sear-Brown Group
Lake Success, NY 11042
Contact: James Noonan, PE
Phone: (516) 358-7270
FAX: (518) 358-2588
Capabilities: E F 1 3

TAMS Consultants, Inc.
New York, NY 10017
Contact: G. Barrie Heinzenknecht
Phone: (212) 867-1777
FAX: (212) 697-6354
Capabilities: E F H L 1 2 5 10

Vollmer Associates
New York, NY 10010
Contact: Robert Samson
Phone: (212) 366-5600-112
FAX: (212) 366-5629
Capabilities: E F 1 3

Lev Zetlin Associates, Inc.
New York, NY 10011
Contact: Joseph N. Zuliani
Phone: (212) 741-1300
FAX: (212) 675-4052
Capabilities: E F 1 T 1 3 5

NORTH CAROLINA

Division of Emergency Management
Raleigh, NC 27603-1335
Contact: Joseph F. Myers
Phone: (919) 733-3867
FAX: (919) 733-7554

Contractors & Engrs. Services, Inc.
Goldsboro, NC 27530
Contact: John D. Grady
Phone: (919) 735-7355
FAX: (919) 736-1535
Capabilities: E H L O 1 3 10

Doar & Associates, P.A.
Charlotte, NC 28222
Contact: George A. Greene, PE
Phone: (704) 847-1525
FAX: (704) 845-2083
Capabilities: E F L T 1 2 3 12

J. A. Jones Construction
Charlotte, NC 28210
Contact: Norm Delbridge
Phone: (704) 569-2962
FAX: (704) 569-6548
Capabilities: E F R T 3 10

Northeast Construction Co.
Jacksonville, NC 28546
Contact: Stephen A. Strapec
Phone: (919) 353-3558
FAX: (919) 353-3005
Capabilities: E F T 3

RS&H Architects-Engineers-Planners, Inc.
Greensboro, NC 27407
Contact: Tom Stones
Phone: (919) 852-6152
FAX: (919) 855-3029
Capabilities: F 1 1 3 5

Robert M. Stafford, Inc.
Charlotte, NC 28269
Contact: Thomas R. Anderson
Phone: (704) 875-0207
FAX: (704) 875-0408
Capabilities: E F T 5

NORTH DAKOTA

North Dakota Division of Emergency
Bismarck, ND 58502-5511
Contact: Ronald D. Affedlt
Phone: (701) 224-2113
FAX: (701) 224-2119

Molstad Excavating Inc.
Grand Forks, ND 58201
Contact: Gary Molstad
Phone: (701) 746-5474
FAX: (701) 746-5475
Capabilities: F H S T

Peterson Construction Co., Inc.
Grand Forks, ND 58201
Contact: Clarence O. Peterson
Phone: (701) 746-6446
FAX: (701) 772-1763
Capabilities: F H S T 1 3 9 10

OHIO

Ohio Emergency Mgmt. Agency
Columbus, OH 43235-2712
Contact: Dale W. Shipley
Phone: (614) 889-7150
FAX: (614) 889-7183

Baker Concrete Construction Inc.
Monroe, OH 45050
Contact: Mike Schneider
Phone: (513) 539-4000
FAX: (513) 539-4380
Capabilities: 1 3

Barge, Waggoner, Sumner, and Cannon
Dayton, OH 45342
Contact: C. R. "Chuck" Westhart
Phone: (513) 438-0378
FAX: (513) 438-0379
Capabilities: E F 1 T 1 3 5 10

Burgess & Niple, Limited
Columbus, OH 43220
Contact: Frank C. Agin
Phone: (614) 459-2050
FAX: (614) 451-1385
Capabilities: E F H T 1 2 3 10

Dodson-Lindblom Associates, Inc.
Columbus, OH 43229
Contact: A. James Siebert
Phone: (614) 848-4141
FAX: (614) 848-6712
Capabilities: E F H L 3 5 10

A.M. Kinney, Inc.
Cincinnati, OH 45219
Contact: Leonard T. Rudick
Phone: (513) 281-2900
FAX: (513) 281-1123
Capabilities: H 1 L T 2 5 7 10

T. Luckey Sons, Inc.
Harrison, OH 45030
Contact: Thomas A. Luckey
Phone: (513) 353-2655
FAX: (513) 535-2655
Capabilities: E L R 1 3 10

Frank Messer & Sons Const. Co.
Cincinnati, OH 45229
Contact: Edward H. Miller
Phone: (513) 242-1541
FAX: (513) 242-6467
Capabilities: E 1 T 3

Metcalf & Eddy, Inc.
Cleveland, OH 44122
Contact: Richard A. Bell
Phone: (216) 292-8191
FAX: (216) 292-5931
Capabilities: H 1 O R 1 3 10 12

Metcalf & Eddy, Inc.
Columbus, OH 43231
Contact: Chris Stotler
Phone: (614) 890-5501
FAX: (614) 890-0372
Capabilities: H X L O 1 3 7 10

MICAH Systems, Inc.
Fairborn, OH 45324
Contact: Thomas G. Batty
Phone: (513) 429-2991
FAX: (513) 429-2854
Capabilities: 5

MK-Ferguson Group
Cleveland, OH 44113
Contact: James J. Gajocb
Phone: (216) 523-5228
FAX: (216) 523-5228
Capabilities: E F H I 1 3 5 10

Montgomery County Engr. Office
Dayton, OH 45422
Contact: Rex A. Dickey
Phone: (513) 225-4889
FAX: (513) 497-7441
Capabilities: H S 1 3

NBBJ
Columbus, OH 43215
Contact: Mark Perry
Phone: (614) 224-
FAX: (614) 224-0218
Capabilities: 3

QSource Engineering Inc.
Miamisburg, OH 45342
Contact: Don Main
Phone: (513) 866-4211
FAX: (513) 866-7893
Capabilities: H 3 10

S.E.M. Partners, Inc., Arch., Planners
Columbus, OH 43214
Contact: Jack Chapin
Phone: (614) 267-6369
FAX: (614) 267-0027
Capabilities: 3

Shaw, Weiss & De Naples
Daton, OH 45402
Contact: George B. Shaw
Phone: (513) 443-0181
FAX: (513) 443-0982
Capabilities: H O 1 3 10

Spectra-Physics Laserplane, Inc
Dayton, OH 45424
Contact: Jack A. Patton
Phone: (513) 233-8921
FAX: (513) 233-9004
Capabilities: E F 3

Wise Construction Company, Inc.
Dayton, OH 45427
Contact: David F. Abney, II
Phone: (513) 854-0281
FAX: (513) 837-4890
Capabilities: 2 3 9 11

OKLAHOMA

Oklahoma Department of Civil Emergency Management
Oklahoma City, OK 73152
Contact: John F. Dahl
Phone: (405) 521-2481
FAX: (405) 521-4053

The Benham Group
Tulsa, OK 74135
Contact: W.B. Smith
Phone: (918) 492-1600, ext. 316
FAX: (918) 492-1031
Capabilities: F H E 3 5 10 12

Bruton Knowles & Love, Inc.
Tulsa, OK 74158
Contact: Robert O. Bruton
Phone: (918) 835-9588
FAX: (918) 835-9119
Capabilities: E F T 1 3

Jim Cooley Construction, Inc.
Oklahoma City, OK 73105
Contact: Robert Cooley
Phone: (405) 528-8093
FAX: (405) 521-0379
Capabilities: I S T 1

Design Drafting, Inc.
Oklahoma City, OK 73099

96

Contact: Lon Spencer
Phone: (405) 354-6679
FAX: (405) 354-4827
Capabilities: E F T 1 3

FHC, Inc.
Tulsa, OK 74135-6374
Contact: Tony Dark, PE
Phone: (918) 663-7300
FAX: (918) 663-6269
Capabilities: E F T 1 3

Poe & Associates, Inc.
Tulsa, OK 74147
Contact: Joe H. Pitts
Phone: (918) 665-8800
FAX: (918) 665-6076
Capabilities: K F L T 1 3

Rees Associates, Inc.
Oklahoma City, OK 73112-1499
Contact: C. Leroy James, AIA
Phone: (405) 942-7337
FAX: (405) 948-1261
Capabilities: E F T 2 3 5

Roberts/Schornick & Associates, Inc.
Norman, OK 73072
Contact: Ken Senour
Phone: (405) 321-3895 ext. 163
FAX: (405) 364-1708
Capabilities: H O R 3 10

Standard Testing & Engineering
Oklahoma City, OK 73105
Contact: Mark Byrd
Phone: (405) 528-0541
FAX: (405) 528-0559
Capabilities: F H I T 1 3 9 10

Willbros Butler Engineers, Inc.
Tulsa, OK 74136
Contact: Walt Lindemann
Phone: (918) 496-0400
FAX: (918) 491-9436
Capabilities: E F O T 3 5 7 12

OREGON

Emergency Management Division
Salem, OR 97310
Contact: Myra T. Lee
Phone: (503) 378-4124
FAX: (503) 588-1378

Cornforth Consultants, Inc.
Portland, OR 97223
Contact: Derek H. Cornforth
Phone: (503) 452-1100
FAX: (503) 452-1528
Capabilities: L E S 3

URS Consultants, Inc.
Portland, OR 97232
Contact: Thomas A. Hjort
Phone: (503) 238-7050
FAX: (503) 230-0477
Capabilities: E F H T 1 3 5 10

Van Gulik/Oliver, Inc.
Portland, OR 97034
Contact: Paul E. Oliver
Phone: (503) 635-3734
FAX: (503) 636-4178
Capabilities: E 1 3

PENNSYLVANIA

Pennsylvania Emergency Management Agency
Harrisburg, PA 17105-3321
Contact: Joseph L. LaFleur
Phone: (717) 783-8016
FAX: (717) 783-7393

Benatec Associates
Camp Hill, PA 17011
Contact: Richard M. Miller
Phone: (717) 763-7391
FAX: (717) 763-7397
Capabilities: F H O 3 5

Brinjac, Kamble & Associates, Inc.
Harrisburg, PA 17102
Contact: Tom Finnerty
Phone: (717) 233-4502
FAX: (717) 233-0833
Capabilities: E F I T 3 12

Buchart-Horn, Inc.
York, PA 17405
Contact: Peta N. Richkus
Phone: (717) 843-5561
FAX: (717) 845-3703
Capabilities: E F H O 1 3 5 10

Capitol Engineering Corp.
Dillsburg, PA 17019
Contact: Edward W. Boggs
Phone: (717) 432-9628
FAX: (717) 432-2781
Capabilities: F I L 1 3

Chester Environmental, Inc.
Coraopolis, PA 15108
Contact: Bruce A. Fletcher
Phone: (412) 269-5827
FAX: (412) 269-5749
Capabilities: 3 10

Conti Environmental, Inc.
Pittsburgh, PA 15205
Contact: Dennis Morgan
Phone: (412) 788-1313
FAX: (412) 788-6750
Capabilities: F H L O 1 3 9 10

Day & Zimmerman, Inc.
Philadelphia, PA 19103
Contact: Edward J. McGinniss
Phone: (215) 299-8476
FAX: (215) 299-8344
Capabilities: E F I T 1 3 5 7

Gannett Fleming, Inc.
Harrisburg, PA 17106-7100
Contact: Richard B. Ulp
Phone: (717) 763-7211
FAX: (717) 763-1808
Capabilities: F H L O 1 3 5 10

IT Corporation
Monroeville, PA 15146
Contact: Jack Wright
Phone: (412) 372-7701
FAX: (412) 373-7135
Capabilities: H O 3 10

Pennoni Associates, Inc.
Philadelphia, PA 19130
Contact: Joseph V. Mullin, PE
Phone: (215) 561-0460
FAX: (215) 496-0063
Capabilities: F H O T 1 3 10 12

Primavera Systems, Inc.
Bala Cynwyd, PA 19004-1576
Contact: Scott Deutsch
Phone: (215) 667-8600
FAX: (215) 667-7894
Capabilities: 5

SSM/Spotts, Stevens & McCoy, Inc.
Reading, PA 19610
Phone: (215) 376-6581
FAX: (215) 376-6950
Capabilities: H 10

STV Group
Pottstown, PA 19464
Contact: Edward E. Gilvey
Phone: (215) 326-4600
FAX: (215) 326-2718
Capabilities: E F H I 1 3 10

Roy F. Weston, Inc.
West Chester, PA 19380
Contact: Glenn Johnson
Phone: (215) 430-7501
FAX: (215) 430-3158
Capabilities: E F H I O 2 3 5 7 10

SOUTH CAROLINA

Emergency Preparedness Division
Columbia, SC 29201-3782
Contact: Paul R. Lansdord
Phone: (803) 734-8020
FAX: (803) 734-8062

Lockwood Greene Engineers, Inc
Spartanburg, SC 29304
Contact: James M. Anderson
Phone: (800) 845-3302
FAX: (803) 599-0436
Capabilities: F H I R 1 2 3 12

LS3P Architects, Ltd.
Charleston, SC 29401
Contact: Vito R. Pascullis
Phone: (803) 577-4444
FAX: (803) 722-4789
Capabilities: E F T 3

Stevens & Wilkinson, Inc.
Columbia, SC 29202
Contact: Karl S. Bowers
Phone: (803) 765-0320
FAX: (803) 254-6209
Capabilities: F 1 2 3 6

SOUTH DAKOTA

Division of Emergency Management
Pierre, SD 57501-5060
Contact: Gary N. Whitney
Phone: (605) 773-3231
FAX: (605) 773-3580

Banner Associates, Inc.
Rapid City, SD 57709
Contact: Tim Conner
Phone: (605) 343-0222
FAX: (605) 343-3477
Capabilities: E F L T 1 3 5

TENNESSEE

Emergency Management Agency
Nashville, TN 37204
Contact: Lacy E. Suiter
Phone: (615) 741-0001
FAX: (615) 242-9635

Allen & Hoshall
Memphis, TN 38112
Contact: Thomas E. Needham
Phone: (901) 327-8222
FAX: (901) 324-7154
Capabilities: E F H T 3 10 12

Barge, Waggoner, Sumner and Cannon, Inc.
Nashville, TN 37201
Contact: David L. Davidson
Phone: (615) 254-1500
FAX: (615) 255-6572
Capabilities: T E F H 1 2 3 10

Calspan Corp., Service Contracts Div./AEDC Operations
Arnold AFB, TN 37389-4300
Contact: J. N. Patterson
Phone: (615) 455-3101
FAX: (615) 393-3608
Capabilities: 1 H O 5

Continental Engineering, Inc.
Memphis, TN 38116
Contact: Gerald Lawson
Phone: (901) 345-3480
FAX: (901) 396-8735
Capabilities: E F H L 1 3 5 10

Ellers, Oakley, Chester & Rike, Inc.
Memphis, TN 38105
Contact:
Phone: (901) 526-7321
FAX: (901) 526-7329
Capabilities: 1 3 4

EMPE, Inc.
Nashville, TN 37228
Contact: Barry Westbrook
Phone: (615) 255-9300
FAX: (615) 255-9345
Capabilities: H O 3 5 10

Environmental Protection Sys., Inc.
Brentwood, TN 37027
Contact: Russell Pitzer, PE
Phone: (615) 373-8021
FAX: (615) 373-7997
Capabilities: H I O 3 5 10

Espey, Huston & Assoc., Inc.
Nashville, TN 37214
Contact: Wayne R. Long
Phone: (615) 885-0298
FAX: (615) 391-4606
Capabilities: E F H O 1 3 5 10

Gresham, Smith and Partners
Nashville, TN 37202
Contact: Robert L. Sylar, PE
Phone: (615) 385-3310
FAX: (615) 269-8162
Capabilities: F H L S 1 3 8 10

IT Corporation
Knoxville, TN 37923
Contact: Don Ewig
Phone: (615) 690-3211
FAX: (615) 690-3226
Capabilities: H O 3 10

Neel-Schaffer, Inc.
Nashville, TN 37210
Contact: Richard Riggins
Phone: (615) 254-4257
FAX: (615) 254-4261
Capabilities: F

PDR Engineers, Inc.
Memphis, TN 38103-5135
Contact: Frank Gianotti
Phone: (901) 523-9500
FAX: (901) 523-9502
Capabilities: E F H T 3 5 12

Pickering Inc.
Memphis, TN 38104
Contact: Joe Emison
Phone: (901) 726-0810
FAX: (901) 272-6911
Capabilities: F H L 3 5 10 12

Smith Seckman Reid, Inc.
Nashville, TN 37203
Contact: Stephen C. Lane
Phone: (615) 383-1113
FAX: (615) 386-8469
Capabilities: E F H T 1 3 5 12

Structural Affiliates International, Inc.
Nashville, TN 37212
Contact: Robert P. Beall
Phone: (615) 269-0069
FAX: (615) 383-0911
Capabilities: E 1 3

Sverdrup Corporation
Nashville, TN 37222
Contact: Alan Aront
Phone: (615) 331-9232
FAX: (615) 833-8328
Capabilities: E F H 1 2 3 10

TEXAS

Division of Emergency Management
Austin, TX 78773
Contact: Tom Millwee
Phone: (512) 465-2138
FAX: (512) 465-2444

Aguire Associates, Inc.
Dallas, TX 75251
Contact: C. Earl Dedman, PE
Phone: (214) 788-1508
FAX: (214) 788-1583
Capabilities: E F I T 1 3

Aviation Alliance, Inc.
Colleyville, TX 76034
Contact: Shirley A. Roberts, PE
Phone: (817) 498-0388
FAX: (817) 281-1867
Capabilities: F T 1 3 5

Aviles Engineering Corporation
Houston, TX 77041
Contact: C. Henry Roth
Phone: (713) 895-7645
FAX: (713) 895-7943
Capabilities: F 1 3

Wilfred Baker Engineering, Inc.
San Antonio, TX 78209-1128
Contact: Mr. Quentin A. Baker
Phone: (210) 824-5960
FAX: (210) 824-5964
Capabilities: 1 3 10

Bender Associates
San Antonio, TX 78249
Contact: Ralph Bender, AIA, AICP
Phone: (210) 696-4116
FAX: (210) 697-3198
Capabilities: F 3

Binkley & Barfield, Inc.
Houston, TX 77008
Contact: B.T. White
Phone: (713) 869-4474
FAX: (713) 869-6702
Capabilities: F T 1 3

Bridgefarmer & Associates, Inc.
Dallas, TX 75081
Contact: Glen G. Brown
Phone: (214) 231-8800
FAX: (214) 231-5900
Capabilities: F 1 3

Carter & Burgess, Inc.
Fort Worth, TX 76102
Contact: Russell A. Karr, PE
Phone: (817) 335-2611
FAX: (817) 877-5646
Capabilities: F H T 1 3 5

Dames & Moore
San Antonio, TX 78232
Contact: Gary Alkire
Phone: (512) 496-7911
FAX: (512) 496-1504
Capabilities: H O 3 10

Freese and Nichols, Consulting Engrs.
Fort Worth, TX 76109
Contact: Joe Paul Jones
Phone: (817) 336-7161
FAX: (817) 877-4267
Capabilities: F H I T 1 2 3 5

Friberg Assoc. Inc., Cons. Engrs.
Fort Worth, TX 76113-2080
Contact: Bob Alexander
Phone: (817) 336-0543
FAX: (817) 429-0119
Capabilities: F 1 T 2 3 5 12

Greiner Engineering, Inc.
Irving, TX 75039
Contact: William Kallas, PE
Phone: (214) 869-1001
FAX: (214) 869-3111
Capabilities: E F T 1 3 5

Greiner, Inc.
Fort Worth, TX 76155
Contact: L. Darrell Thompson, PE
Phone: (817) 545-0891
FAX: (817) 545-0534
Capabilities: F T 1 3 5

Ground Technology, Inc.
Houston, TX 77081
Contact: Ruma Acharya
Phone: (713) 664-0226
Capabilities: E F 1 3

Hanscomb Associates, Inc.
Dallas, TX 75248
Contact: Richard G. Jakus
Phone: (214) 458-9040
FAX: (214) 458-7271
Capabilities: E F I T 1 3 5 7

HNTB Corporation
Dallas, TX 75240
Contact: Daniel F. Becker, PE
Phone: (214) 661-5626
FAX: (214) 661-5614
Capabilities: 1 3

Jaico, Inc
Houston, TX 77045
Contact: Lee George
Phone: (713) 728-8480
FAX: (713) 729-6553
Capabilities: F

Bernard Johnson Incorporated
Houston, TX 77042
Contact: Franklin B. Moon
Phone: (713) 977-7411
FAX: (713) 977-4781
Capabilities: F 1 3 5 12

Rex K. Johnson Company
Lampasas, TX 76550
Contact: Rex K. Johnson
Phone: (512) 556-3684
FAX: (512) 556-5774
Capabilities: T F 3

Nathelyne A. Kennedy & Associates
Houston, TX 77081
Contact: Nathelyne A. Kennedy
Phone: (713) 988-0145
FAX: (713) 988-4624
Capabilities: F 1 3

Macina, Bose, Copeland and Associates, Inc.
San Antonio, TX 78216
Contact: Sam Bledsoe
Phone: (210) 349-0151
FAX: (210) 349-9302
Capabilities: F 3

Frank W. Neal & Associates, Inc.
Fort Worth, TX 76104
Contact: Kenneth C. Burns
Phone: (817) 332-1944
FAX: (817) 336-8620
Capabilities: 1 3

Parkhill, Smith & Cooper, Inc.
Lubbock, TX 79412
Contact: Dennis W. Clayton
Phone: (806) 747-0161
FAX: (806) 747-7146
Capabilities: E F L T 1 3

Alan Plummer and Associates, Inc.
Fort Worth, TX 76013-2506
Contact: James L. Altstaetter, PE
Phone: (817) 332-4085
FAX: (817) 338-4626
Capabilities: 10

Poe Engineers, Inc.
Fort Worth, TX 76120-1292
Contact: Wayne Barton
Phone: (817) 429-7870
FAX: (817) 446-1030
Capabilities: F H I T 1 3 10

Bill Reiffert & Associates
San Antonio, TX 78232
Contact: Bill Reiffert
Phone: (512) 366-9313
FAX: (512) 366-9318
Capabilities: E F I T 1 3

RTKL Associates, Inc.
Dallas, TX 75201

Contact: Joseph J. Scalabrin
Phone: (214) 871-8877
FAX: (214) 871-7023
Capabilities: E F I T 3 5 12

Sunland Engineering Company
Houston, TX 77042
Contact: Orlando J. Teran
Phone: (713) 952-5150
FAX: (713) 952-5188
Capabilities: E 3

Texas Industries, Inc.
Dallas, TX 75247
Contact: Rod S. Bond
Phone: (214) 647-3802
FAX: (214) 647-3877
Capabilities: E H L R 3 7 10

Vidaud + Associates Inc.
Dallas, TX 75240
Contact: William Vidaud, AIA
Phone: (214) 934-8890
FAX: (214) 458-2323
Capabilities: E F I T 1 2 3 8

Roy F. Weston, Inc.
Houston, TX
Contact: John DiFilippo
Phone: (713) 621-1620
FAX: (713) 621-6959
Capabilities: E F H I O 2 3 5 7 10

Ed A. Wilson, Inc.
Fort Worth, TX 76110
Contact: Mel Burdorf
Phone: (817) 926-0231
FAX: (817) 926-0691
Capabilities: F 3

H. B. Zachry Company
San Antonio, TX 78221
Contact: Bob Kalt
Phone: (210) 922-1213
FAX: (210) 927-8060
Capabilities: E F L T 1 3

UTAH

Division of Comprehensive Emergency Management
Salt Lake City, UT 84114
Contact: Lorayne Frank
Phone: (801) 538-3400
FAX: (801) 538-3770

CH2M Hill
Salt Lake City, UT 84107
Contact: Michael Collins, PE
Phone: (801) 269-0110
FAX: (801) 269-1115
Capabilities: E F H O 1 3 10 12

Industrial Health Inc.
Salt Lake City, UT 84106
Contact: Donald E. Marano
Phone: (801) 466-2223
FAX: (801) 466-9616
Capabilities: E H O 3 5 8 10

Wasatch Environmental, Inc.
Salt Lake City, UT 84104
Contact: Tom Miller
Phone: (801) 972-8400
FAX: (801) 972-8459
Capabilities: H O 2 5 10

VIRGINIA

State Co-ordinator, Office of Emergency Services
Richmond, VA 23225-6491
Contact: Addison E. Slayton, Jr.
Phone: (804) 674-2497
FAX: (804) 674-2490

Air Survey Corporation
Sterling, VA 20166-6702
Contact: John E. Combs
Phone: (703) 471-4510
FAX: (703) 471-6810
Capabilities: E F L 1 3

Alpha Corporation
Sterling, VA 20164
Contact: Edwin D. Heine, PE
Phone: (703) 709-2206
FAX: (703) 709-0643
Capabilities: E F L T 1 3

American Standard Inc.
Arlington, VA 22201
Contact: Michael Weise
Phone: (703) 525-4015
FAX: (703) 525-0327
Capabilities: E T 3 7

Atkinson Dredging Company
Chesapeake, VA 23301
Contact: Thomas J. Wright
Phone: (804) 482-2141
FAX: (804) 482-1682
Capabilities: F 3

Michael Baker Corp.
Alexandria, VA 22304
Contact: Thomas P. Yoder
Phone: (703) 960-8800
FAX: (703) 960-9125
Capabilities: E F H L 1 3 5 10

BDM International
McLean, VA
Contact: Dr. Guy P. York
Phone: (904) 286-5677
FAX: (904) 286-5768
Capabilities: H 1 4 5 7 10

Bairley, Maginnis & King, P.C.
Alexandria, VA 22314
Contact: H. (Skip) Maginnis
Phone: (703) 548-0460
FAX: (703) 549-3324
Capabilities: E F 3 5

Bowman, Foster & Associates, P.C.
Virginia Beach, VA 23462
Contact: Ron Foster
Phone: (804) 499-5921
FAX: (804) 499-8128
Capabilities: F 3 12

Buchart-Horn, Inc.
Williamsburg, VA 23185
Contact: W. Ben Burton, PE
Phone: (804) 229-3359
FAX: (804) 220-3721
Capabilities: E F H O 1 3 5 10

CDM Federal Programs Corporation
Fairfax, VA 22033
Contact: Jonathan Curtis
Phone: (703) 968-0900
FAX: (703) 968-0915
Capabilities: H 10

Centex-Simpson Construction Co., Inc.
Fairfax, VA 22030
Contact: Jules D. Roberts
Phone: (703) 273-3311
FAX: (703) 934-5520
Capabilities: E F I T 3

Dewberry & Davis
Fairfax, VA 22031
Contact: William G. Fry
Phone: (703) 849-0321,
FAX: (703) 849-0648
Capabilities: E F H T 1 3 5 10

DynCorp
Reston, VA 22091
Contact: K. W. Gooch
Phone: (703) 264-9213
FAX: (703) 264-9359
Capabilities: E F H O 3 5 10 12

Ecology and Environment, Inc.
Arlington, VA 22209
Contact: Tory Martinelli
Phone: (703) 522-6065
FAX: (703) 558-7950
Capabilities: H 1 O R 5 10

The Environmental Company, Inc.
Charlottesville, VA 22905
Contact: Jack E. Wilson, PE
Phone: (804) 295-4446
FAX: (804) 295-5535
Capabilities: E F H O 3 5 8 10

Env. Science & Engineering, Inc.
Herndon, VA
Contact: Jon Byroade
Phone: (703) 318-8900
FAX: (703) 318-0411
Capabilities: H O 10

Espey, Huston & Associates, Inc.
Williamsburg, VA 23185
Contact: Len Gregor
Phone: (804) 253-2858
FAX: (804) 253-5632
Capabilities: E F H T 3 10

Global Associates
McLean, VA 22102
Contact: Edwin P. Geesey
Phone: (703) 893-9890
FAX: (703) 893-0592
Capabilities: O H 3 5 7 8

Global Associates (Global Phillips Cartner)
Williamsburg, VA 23187
Contact: Craig O. Moffatt
Phone: (804) 887-7402
FAX: (804) 887-0478
Capabilities: F H 1 O 7 10 12 4

Frederic R. Harris, Inc.
Fairfax, VA 22031
Contact: Michael J. McCarthy
Phone: (703) 641-5600
FAX: (703) 641-5649
Capabilities: E F O 1 3 5

Hayes, Seay, Mattern & Mattern, Inc.
Virginia Beach, VA 23462
Contact: Landon G. Carpenter
Phone: (804) 499-2391
FAX: (804) 490-1368
Capabilities: F H 1 O 1 2 3

Hertz Equipment Rental Corp.
Alexandria, VA 22305
Contact: Jim Bach
Phone: (703) 683-9138
FAX: (703) 683-9142
Capabilities: E F S T 1 3 10 12

Intergraph Corporation
Reston, VA 22091
Contact: Rich Grady
Phone: (703) 264-5600
FAX: (703) 264-7131
Capabilities: E F H O 1 3 5 10

ITT Federal Services Corp.
Hampton, VA 23666
Contact: Daryl Leed
Phone: (804) 766-1400
FAX: (804) 766-1400
Capabilities: H I O S 1 2 3 10

Law Engineering, Inc.
Chantilly, VA 22021
Contact: Joseph P. Klein, III
Phone: (703) 968-4700
FAX: (703) 968-4778
Capabilities: F L O 1 3 5 10

Law Engineering, Inc.
Chesapeake, VA 23320
Contact: Jack Spencer
Phone: (804) 436-2040
FAX: (804) 436-9653
Capabilities: E F H 1 3 5 10

MIC Industries, Inc.
Reston, VA 22090
Contact: Forrest T. Gay, III
Phone: (703) 318-1900
FAX: (703) 318-9321
Capabilities: E F I T 6

James M. Montgomery, Consulting Engineers
Herndon, VA 22070
Contact: Gerald B. Edwards, P.G.
Phone: (703) 478-3400
FAX. (703) 478-3375
Capabilities: H O 3 10

J.W. Morris, Ltd.
Arlington, VA 22203
Contact: J.W. Morris
Phone: (703) 525-4875
FAX: (703) 525-8324
Capabilities: F T S

Malcolm Pirnie, Inc.
Newport News, VA 23606
Contact: Dr. Bruce W. Schwenneker
Phone: (804) 873-8700
FAX: (804) 873-8723
Capabilities: L O R 3 10

Seema, Inc.
Hampton, VA 23666
Contact: Mahesh B. Shah, PE
Phone: (804) 865-0061
FAX: (804) 867-9338
Capabilities: 3

Shriver & Holland Associates
Norfolk, VA 23510
Contact: Donald L. Whitesell
Phone: (804) 627-4525
FAX: (804) 627-8228
Capabilities: 3

Talbot Group, Ltd.
Virginia Beach, VA 23452
Contact: Richard Bowie
Phone: (804) 340-0322
FAX: (804) 498-1043
Capabilities: E F H I 1 3 10

3D/International Inc.
Alexandria, VA 22314
Contact: Dick Cowan
Phone: (703) 683-6700
FAX: (703) 683-6701
Capabilities: F H 3 5 10

Tidewater Construction Corp.
Norfolk, VA 23501
Contact: J.E. Davis III
Phone: (804) 420-4140
FAX: (804) 420-3551
Capabilities: F I 3

Virtexco Corporation
Norfolk, VA 23509
Contact: Robert H. Wells
Phone: (804) 857-5307
FAX: (804) 853-0599
Capabilities: F I S T 1 3 7

VW International, Inc.
Alexandria, VA 22306
Contact: James M. Aitkin
Phone: (703) 768-6265
FAX: (703) 768-6272
Capabilities: E I 4 5 7

Waterway Surveys and Engr., Ltd.
Virginia Beach, VA 23462
Contact: James W. Holton, Jr.
Phone: (804) 490-1691
FAX: (804) 490-1348
Capabilities: E F H L 3

R. Kenneth Weeks Engineers
Norfolk, VA 22320
Contact: R. Kenneth Weeks
Phone: (804) 625-0395
FAX: (804) 623-0389
Capabilities: E F O 1 3 5

Roy F. Weston, Inc.
Virginia Beach, VA 23462
Contact: Mr. Marving Farmer
Phone: (804) 473-9729
FAX: (804) 473-9744
Capabilities: H O 3 10

Wilbur Smith Associates
Falls Church, VA 22042
Contact: Carlos C. Villarreal
Phone: (703) 573-3850
FAX: (703) 573-3854
Capabilities: F T 1 3 5 7

Wiley & Wilson
Lynchburg, VA 24501
Contact: Albert L. Nichols, Jr.
Phone: (804) 947-1901
FAX: (804) 947-1264
Capabilities: F H O 1 3 5 10

WASHINGTON

Department of Emergency Management
Olympia, WA 98504-8346
Contact: Kate Helmbach
Phone: (206) 923-4901
FAX: (206) 438-7395

Applied Geotechnology Inc.
Bellevue, WA 98005
Contact: Don Bruggers, PE
Phone: (206) 453-8383
FAX: (206) 646-9523
Capabilities: E H L O 1 3 5 10

Dames & Moore
Seattle, WA 98121
Contact: Joseph Lamont, Jr.
Phone: (206) 728-0744
FAX: (206) 727-3369
Capabilities: E F L H 3 10

Ecology & Environment, Inc.
Seattle, WA 98104
Contact: Jeff Villnow
Phone: (206) 624-9537
FAX: (206) 621-9832
Capabilities: H O R 10

Global Associates
Yakima Firing Rang, WA 98901
Contact: Ray Olmstead
Phone: (509) 457-7685
FAX: (509) 457-0636
Capabilities: H I S 3 4 10 12

John Graham Assoc./DLR Group
Seattle, WA 98101
Contact: Robert L. Sundin
Phone: (206) 461-6000
FAX: (206) 461-6049
Capabilities: E F I T 3

Hammond, Collier & Wade-Livingstone
Seattle, WA 98103
Contact: Larry R. Wade
Phone: (206) 632-2664
FAX: (206) 632-0947
Capabilities: E F L 3

Harding Lawson Associates (HLA)
Seattle, WA 98101
Contact: Larry Toimil
Phone: (206) 622-0812
FAX: (206) 292-8619
Capabilities: F H O 3 5 10

Kramer, Chin, & Mayo, Inc.
Seattle, WA 98101
Contact: John McGlenn
Phone: (206) 443-5329
FAX: (206) 443-5372
Capabilities: E F L I 3 5

Landau Associates, Inc.
Edmonds, WA 98020
Contact: John Baker
Phone: (206) 778-0907
FAX: (206) 778-6409
Capabilities: E H L I 2 10

McLaren Peterson Assoc., Inc.
Seattle, WA 98109-5129
Contact: Ron Martinson
Phone: (206) 622-4580
FAX: (206) 622-0422
Capabilities: E I L S 1 3

Monaco Enterprises, Inc.
Spokane, WA 99216
Contact: Gene Monaco
Phone: (509) 926-6277
FAX: (509) 924-4980
Capabilities: H I 4 7

NBBJ Architects
Seattle, WA 98104
Contact: Dave Leptich
Phone: (206) 223-5555, ext. 5095
FAX: (206) 223-5018
Capabilities: E 3

Parsons, Brinckerhoff, Quade & Douglas, Inc.
Seattle, WA 98104
Contact: Robert J. Berg
Phone: (206) 382-5200
FAX. (206) 382-5222
Capabilities: E L F I 3 12

Peratrovich, Nottingham and Drage, Inc.
Seattle, WA 98104
Contact: Jeffrey F. Gilman
Phone: (206) 624-1387
FAX: (206) 624-1388
Capabilities: E F L O 1 3 5 7

The Schemmer Associates Inc.
Bellvue, WA 98006
Contact: James A. Schemmer, PE
Phone: (206) 643-6993
FAX: (206) 643-0595
Capabilities: E F H I 1 3

Science Applications Intl. Corp.
Bothell, WA 98012
Contact: William Reynolds, Ph.D.
Phone: (206) 485-5800
FAX: (206) 485-5566
Capabilities: H O R 3 5 7 10

SCM Consultants, Inc.
Kennewick, WA 99336
Contact: Leon Lindbloom, PE
Phone: (509) 783-1625
FAX: (509) 783-1861
Capabilities: E F H R 1 3 5 10

Sparling, Inc.
Seattle, WA 98101
Contact: Robert B. Sparling, PE
Phone: (206) 667-0555
FAX: (206) 667-0510
Capabilities: 2 3 12

The Tsang Partnership
Tacoma, WA 98402
Contact: Jim Tsang
Phone: (206) 272-9383
FAX: (206) 383-8059
Capabilities: 3

URS Consultants, Inc.
Seattle, WA 98101
Contact: John E. Butts
Phone: (206) 623-1800
FAX: (206) 233-9570
Capabilities: E F H T 1 3 5 10

WISCONSIN

Division of Emergency Government
Madison, WI 53707
Contact: Robert M. Thompson
Phone: (608) 266-3232
FAX: (608) 266-1569

Durrant Architects Inc.
Madison, WI 53704
Contact: Jerold W. Dommer, AIA
Phone: (608) 241-3340
FAX: (608) 241-1031
Capabilities: E F I T 3 5

Durrant Engineers, Inc.
Madison, WI 53704
Contact: William F. Batterman, PE
Phone: (608) 241-3340
FAX: (608) 241-1031
Capabilities: I T 1 2 3 12

Foth & Van Dyke
Green Bay, WI 54304
Contact: Ray Kopish
Phone: (414) 497-2500
FAX: (414) 497-8516
Capabilities: H 3 10

Mead & Hunt, Inc.
Madison, WI 53710
Contact: Mike Shimanski
Phone: (608) 273-6380
FAX: (608) 273-6391
Capabilities: F I S T 1 3 12

WEST VIRGINIA

Office of Emergency Services
Charleston, WV 25305
Contact: Carl L. Bradford
Phone: (304) 558-5380
FAX: (304) 344-4538

The Chester Engineers
Huntington, WV 25701
Contact: J. Gregory Mennuti
Phone: (304) 525-0120
FAX: (304) 522-7615
Capabilities: H 10

Receo Inc. DBA Five-R Company
Cheyenne, WY 82003
Contact: Ray S. Fertig
Phone: (307) 638-7566
FAX: (307) 638-7566
Capabilities: E F S T 1 3 7

INTERNATIONAL

Andrews Kent & Stone
Oxford, England
Contact: David Copeland
Phone: 865-240071
FAX: 865-248006
Capabilities: E F I L 1 3

DMJM Int'l. Dagami Facility
Tokyo, Japan
Contact: William G. Bryant
Phone: 427-55-0508
FAX: 427-58-2247
Capabilities: E F H O 1 3 5 10

Hannah Reed and Associates
Cambridge, England
Contact: G.M. Hannah
Phone: 223-882000
FAX: 223-881888
Capabilities: F L 1 3 5

J.B. Jones Architects, AIA, Inc.
Tamuning, Guam
Contact: Jack A. Jones, FAIA
Phone: 671-646-1101
FAX: 671-649-2728
Capabilities: E F 1 1 3 5

Kajitani Engineering Co., Inc.
Minato-Ku, Tokyo, Japan
Contact: Takeshi Fukazawa
Phone: 3-3478-3181, ext. 278
FAX: 3-3478-3380
Capabilities: E F L 3

Leadbitter Construction
Eynsham Oxford, UK
Contact: Robert Rendell
Phone: 865-880099
FAX: 865-883043
Capabilities: 3

L.U.B. Luegi-Umwelt-Beteilg
D-6000 Frankfurt, Germany
Contact: J.M. Mueller
Phone: 69-5808-3885
FAX: 69-5808-2745
Capabilities: H 10

The Oxford Architects Partnership
Oxford, OX1 5BS Great Britain
Contact: Alan Hobbs
Phone: 44-865-730033
FAX: 44-865-326822
Capabilities: 3

Samsung Heavy Industries Co., Ltd.
Seoul, Korea
Contact: Bon Kook, KOO
Phone: 822-728-6245
FAX: 822-728-6890
Capabilities: F 1 L S 1 3

Samwhan Corporation
Seoul, Korea
Contact: Yong-Kwon Choi
Phone: 822-740-2315
FAX: 822-744-0608
Capabilities: E F L T 1 2 3 12

Soletanche Pumyang Co.
Seoul, Korea
Contact: Francis Dupuis
Phone: 822-732-8194
FAX: 822-720-0360
Capabilities: F L 3

VBR (Vianeli, Brown & Root)
Ankara, Turkey
Contact: MG William Klein (Ret.)
Phone: 904-285-2060
FAX: 904-285-2061
Capabilities: H O S 3 4 5 10

Yalcin Teckaik AS
Ankara, Turkey
Contact: Mr. Tunca Ekin
Phone: 4467-0990
FAX: 4426-7779
Capabilities: E I L O 1 3 4

Explanation of Capability Codes

Each company in this directory selected up to four Experience and Support Codes from the following list:

Experience Codes

E.....Earthquakes
F.....Floods and Hurricanes
H.....Hazardous Materials Discharge
I.....Explosions, Fires
L.....Landslides
O.....Oil Spills
R.....Radiation Leaks
S.....Snow Removal
T.....Tornados

Support Codes

1.....Transportation: highways, streets, bridges, railroads, airports, marine
2.....Communications: telecommunications assets
3.....Public Works & Engineering: restoration, engineering, planning, designing, construction, and demolition
4.....Fire Fighting: management, coordination, detection, and suppression
5.....Information and Planning: collection, evaluation, and processing
6.....Mass Care: shelter, feeding, first aid, information, and bulk distribution
7.....Resource Support: evaluation, location, procurement of material resources, stock surplus
8.....Health & Medical Services: public health response, triage, treatment, trans portation, and evacuation of patients
9.....Urban Search & Rescue: immediate lifesaving response, use of specialized equipment and teams, coordination of federal aircraft
10.....Hazardous Materials: coordinate response to potential HAZMAT discharges; prevent/minimize/mitigate threats to public health, welfare, or the environment
11.....Food: obtain through loan, donation, or direct acquisition; arrange for tranportation to staging areas
12.....Energy: Coordinate provision of emergency power and fuel to support response operations; assess energy system damage, energy supply, demand, and requirements to restore systems

EPA Regional Officers (Johnson, 1990)

EPA REGIONAL OFFICES (PREDESIGNATED OSCs)

REGION	LOCATION	PHONE
I	BOSTON, MA	(617) 223-7210
II	NEW YORK, NY	(212) 264-2525
III	PHILADELPHIA, PA	(215) 597-9814
IV	ATLANTA, GA	(404) 347-4727
V	CHICAGO, IL	(312) 353-2000
VI	DALLAS, TX	(214) 767-2600
VII	KANSAS CITY, MO	(816) 374-5493
VIII	DENVER, CO	(303) 844-3895
IX	SAN FRANCISCO, CA	(415) 974-8153
X	SEATTLE, WA	(206) 442-5810

APPENDIX C
SAMPLE OPERATIONAL REPORTS

1. OPREP-3 Pinnacle Example:

FLASH PRECEDENT

FROM:
TO: CNO WASHINGTON DC
NAVFACENGCOM ALEXANDRIA VA
NMCC WASHINGTON DC

INFO: NAVY JAG ALEXANDRIA VA
CNO OP ZERO ONE WASHINGTON DC
CDR USATWO ATLANTA GA
NAVOPINTCEN SUITLAND MD

SECRET (CLASSIFIED FOR ILLUSTRATION PURPOSES ONLY)
MSG/OPREP-3/ /001/FEB//
FLAGWORD/PINNACLE/-//
TIMELOC/ / /
GENTEXT/NATURAL DISASTER/6.5 MAGNITUDE EARTHQUAKE CALIFORNIA/ GEOGRAPHICAL EXTENT OF EARTHQUAKE UNKNOWN//
APM/DAMAGE TO MILITARY INSTALLATIONS UNKNOWN/NAVY CASUALTIES UNKNOWN/MODERATE DAMAGE TO CIVILIAN MUNICIPALITIES APPEARS EVIDENT//
RMKS/AMPLIFYING INFO TO FOLLOW/VOICE REPORT SENT /COMMANDING OFFICER
ESTIMATE: I ANTICIPATE ADVERSE IMPACT ON READINESS TO NAVAL INSTALLATIONS AND CALL FOR ASSISTANCE FROM CIVILIAN AUTHORITIES//
DECL/OADR//

2. OPREP-3 Navy Blue Example:

IMMEDIATE PRECEDENT

FROM:
TO: CNO WASHINGTON DC
NAVFACENGCOM ALEXANDRIA VA
NMCC WASHINGTON DC

INFO: NAVY JAG ALEXANDRIA VA
CNO OP ZERO ONE WASHINGTON DC
CDR USATWO ATLANTA GA
NAVOPINTCEN SUITLAND MD

SECRET (CLASSIFIED FOR ILLUSTRATION PURPOSES ONLY)
MSG/OPREP-3/ /001/FEB//
FLAGWORD/NAVY BLUE/-//
TIMELOC/ / /
GENTEXT/NATURAL DISASTER/6.5 MAGNITUDE EARTHQUAKE CALIFORNIA/ GEOGRAPHICAL EXTENT OF EARTHQUAKE UNKNOWN//
APM/DAMAGE TO MILITARY INSTALLATIONS UNKNOWN/NAVY CASUALTIES UNKNOWN/MODERATE DAMAGE TO CIVILIAN MUNICIPALITIES APPEARS EVIDENT//
RMKS/AMPLIFYING INFO TO FOLLOW/VOICE REPORT SENT /COMMANDING OFFICER
ESTIMATE: I ANTICIPATE ADVERSE IMPACT ON READINESS TO NAVAL INSTALLATIONS AND CALL FOR ASSISTANCE FROM CIVILIAN AUTHORITIES//
DECL/OADR//

3. Tempest Rapid - Civil Emergency Reporting Example:

```
PRECEDENCE:  IMMEDIATE. (MINIMIZE CONSIDERED)

FROM:
TO:   DA WASHINGTON DC/DAMO-ODS//
       CDR USATWO (X ATLANTA GA)//AFKC-OP-OR//

INFO: CNO WASHINGTON DC//OP-64//
       CMC WASHINGTON DC//POC//
       NAVFACENGCOM ALEXANDRIA VA
       Applicable Disaster Preparedness Group Coordinator
CLASSIFICATION: AS APPLICABLE
SUBJ: INITIAL/DAILY/INTERIM/REPORT, CIVIL EMERGENCY ASSISTANCE REC:DD-COMP
(AR) 114 (3440) (TEMPEST RAPID) XXX-II-XX-XXX
1.  Nature of emergency, location, extent of damage and estimated duration.
2.  Number of Navy-Marine Corps, other military and civilian personnel
committed and nature of actions in which they are employed, if any.
3.  Amount and types of Navy-Marine Corps equipment and supplies committed.
4.  Degree to which civil agencies have committed their resources.
5.  Source of request for assistance.
6.  Number of casualties, injuries, and fatalities of both military and
civilian personnel.
7.  Acreage and location of real property committed.
```

4. Tempest Cider - Civil Defense Reporting Example:

```
PRECEDENCE:  IMMEDIATE. (MINIMIZE CONSIDERED)

FROM:
TO:   AREA COORDINATOR

INFO: CNO WASHINGTON DC//OP-64//
       CMC WASHINGTON DC//POC//
       NAVFACENGCOM ALEXANDRIA VA
       Applicable Disaster Preparedness Group Coordinator
CLASSIFICATION: AS APPLICABLE
SUBJ: INITIAL/DAILY/REPORT, CIVIL DEFENSE (TEMPEST CIDER) REPORT AS OF (    )
XXX-II-XX-XXX
1.  Nature of emergency, location, extent of damage and estimated duration.
2.  Number of Navy-Marine Corps, other military and civilian personnel
committed and nature of actions in which they are employed, if any.
3.  Amount and types of Navy-Marine Corps equipment and supplies committed.
4.  Degree to which civil agencies have committed their resources.
5.  Source of request for assistance.
6.  Number of casualties, injuries, and fatalities of both military and
civilian personnel.
7.  Degree to which the Federal Emergency Management Agency (FEMA) and state
and local authorities have assumed responsibilities and are operating in the
affected area.
```

5. Garden Plot - Civil Disturbance Reporting Example:

PRECEDENCE: IMMEDIATE. (MINIMIZE CONSIDERED)

FROM:
TO: DA WASHINGTON DC/DAMO-ODS//
CDR USATWO (X ATLANTA GA)//AFKC-OP-OR//

INFO: CNO WASHINGTON DC//OP-64//
CMC WASHINGTON DC//POC//
NAVFACENGCOM ALEXANDRIA VA
Applicable Disaster Preparedness Group Coordinator
CLASSIFICATION: AS APPLICABLE
SUBJ: INITIAL/DAILY/INTERIM/REPORT, CIVIL DISTURBANCE, RCS:DD-COM P (AR) 1112 (3440) (GARDEN PLOT) XXX-II-XX-XXX
1. DOD Organization receiving request(s).
2. Place of the actual or anticipated civil disturbance.
3. Name and title of requesting official.
4. Date/time group of request for assistance.
5. Scope of the disturbance or the threat of such a disturbance existing at the time of the request.
6. Type, group, and quantities of assistance requested.
7. Purpose for which assistance was requested.
8. Number of control personnel (civil police) available for employment.
9. Anticipated impact on local community relations resulting from approval/ disapproval of the request.
10. Statement as to whether the request was granted or denied and level at which the decision was made.
11 Reasons for denying or referring the request to higher headquarters.
12 If request is referred to higher headquarters, provide a recommendation and comments, as appropriate, for approval or denial based upon knowledge of the facts at hand.
13. If appropriate, provide additional information on emergency fire fighting assistance provided in civil disturbance situations.
14. Other pertinent information.

APPENDIX D
NASKEF UTILITY CONTINGENCY PLANS (PARTIAL LISTINGS)

(Source NASKEF OPLAN 9000 (DRAFT), July 1992)

POWER CONTINGENCY PLAN:
Commercial:
Power Source: Burfell Hydroelectric Plant
Distribution: Reykjavik and Njardvik overhead lines
Feeder: 66 KV line at 50 cycle
Back-up: None
Base:
Power Source: Building 864
Distribution: 14 circuits-overhead and inground lines
Feeder: Rockville/West End - 13.5 KV/60 cycle
Grindavik - 33 KV/60 cycle
Base - (11) 4.16 KV/60 cycle
Back-up : Diesel engines at Bldg 864
Portable generators
Distribution backfeed on 4.6KV circuits

Drawings: N62467- - : NASKEF FEEDER DRAWINGS(1"-500')
FEEDER LINE DRAWINGS (1"-500')

Generator Operational Data: Available at site.

Facility Power Plants: (PARTIAL LISTING)

BLDG	LOCATION	NO GEN	OUTPUT	FUEL	TIME
864	BASE POWER PLANT	7	11.25 MW	75,000	6
1650	DYE-5 POWER PLANT	4	3.6 MW	34,000	20
2608	GRINDAVIK POWER PLANT	3	1.5 MW	20,000	10

Portable Emergency Generators: (PARTIAL LISTING)

TYPE	ECC	OUTPUT	LOCATION	FUEL	TIME
Onan	#51-178	5 KW	SHOP		
Libby	#51-15805	30 KW	SHOP		
Freemont	#6115-118-1243	60 KW	SHOP		
Detroit	#40B6910A	100 KW	1650/DYE-5		

Feeder Priority Listing: (PARTIAL LISTING)

FEEDER	BUILDINGS
3	WESTEND,TOWER,AIRFIELD LIGHTING
1	BLDG 831,789,790

Feeder/Facility Listing:

FACILITY			FEEDER NO			ELECTRICAL REQUIREMENTS			TRANS	EMERGENCY BACK	
NO	PRI	NAME	PRI	SEC	THIRD	PHASE	VOLT	AMPS	SIZE	GEN	CAP
44	4	NBS	6	13		SINGLE				N/A	

WATER CONTINGENCY PLAN

Commercial:

Source: Sudurnes Water Works: GJA Fissure

Distribution: Bldg 988 - 3x1365 gpm booster pumps thru under ground lines

Treatment: Flourine and Chlorine

Power Source: Commercial

Pump Power: Commercial

Base:

Source: 11 Water wells and storage tanks via 750,000 gall storage tank Bldg 516
500,000 gall elevated tank bldg 875

Distribution: Bldg 516 - 3x1400gpm booster pumps thru under ground lines

Treatment: Fluorine and Chlorine

Power Source: Commercial with emerg gen back-up

Pump Power: Commercial

Drawings: Water Line Distribution System (1"-500')
Valve Location and Status Drawing (1"-500')

Water Wells

WELL	LOCATION	CAPACITY	DEPTH	POWER	FUEL	TIME
8	Bldg 177	145 GPM	163.0 FT			
9	Bldg T621	130 GPM	159.5 FT			
31	Bldg T2302	175 GPM	124.0 FT			

Isloated Water Wells

BLDG	LOCATION	CAPACITY	DEPTH	POWER	FUEL	TIME
1756		10 GPM	130 FT			
1793		20 GPM	156 FT			
1683		10 GPM	50 FT			

HEAT CONTINGENCY PLAN

Commercial: Source Svartsengi (Blue Lagoon)
Distribution Above ground lines
Type 24" insulated steel pipe
Back-up None

Base: Source Pumping station at Fitjar
Distribution Under ground lines
Type 20"-2" insulated steel pipe
Temp/Press 202 F/96 C at 60 lbs

Drawings: Steam Distribution/Valve Drawings

Base Sectors

AREA	MAX DOMESTIC HW (BTU/HR)	MAX HEATING (BTU/HR).	FLOW (L/M)
BASE - E	1,329,319	8,862,129	936
BASE - G	7,370,873	49,139,155	5166
BASE - H1	1,367,229	9,114,862	941
BASE - H2	1,004,904	6,699,360	699
TOTAL	24,666,494	164,443,295	17,288

Active Non-geothermal Units

BLDG	LOCATION	HAZ CODE	AMOUNT	TYPE	CAPACITY	FUEL	TIME
632	LAUNDRY		2	BOIL	6,694 BTU	3,000	3
1639	TORPEDO SHOP		1	BOIL	1,329 BTU	3,000	13
1680	NAVFAC		1	BOIL	7,000 BTU	25,000	20

Stand-by Boiler Units

BLDG	LOCATION	HAZ CODE	AMOUNT	TYPE	CAP	FUEL	TIME
710	HOSPITAL		2	BOIL	3,348 BTU	1,000	2
2578	H-1 OPS		1	BOIL	4,347 BTU		
781	COR CONTROL		1	BOIL		1,000	
271	CHILD CENTER			BOIL			
286	NATO SATCOM BLDG		1	BOIL		3,000	

Units Requiring Preparation

BLDG	LOCATION	HAZ CODE	AMOUNT	TYPE	CAP	FUEL	TIME
794	FLIGHT PODS	a	1	BOIL			
910	HIGH SCHOOL	a,f	2	BOIL			
782	AIR OPS BLDG	o		BOIL			

BOIL - BOILER HA - HOT AIR FURNACE CAPACITY - KBTU
FLOW - LITERS/MIN FUEL - GALLONS TIME - REPAIR DAYS
a - ASBESTOS CONTAM ROOM
f - FUEL TANKS REMOVED
o - MAJOR OVERHAUL

Facility Listing (NOT PROVIDED): A listing of all building heating and domestic hot water requirements is shown in Attachment A. The system can be isolated into sectors shown in paragraph a. It is possible, to connect a High Temperature - Hot Water (HTHW) Boiler to replace geothermal system in

applicable sectors. "Donkey" Boiler connection is possible in all buildings currently connected to geothermal system.

Appendix E
MOS Selection Kit

The normal MOS Selection Kit Contains the following charts and graphs (AFESC, Volume II, Post-Disaster Procedures):

Airfield Complex Map (1"=500'), No example provided.

Airfield Runway Maps (1"=100'), No example provided.

Crater Template, No example provided.

Density Ratio Charts

MOS Selection Form

Aircraft Surface Roughness Selection Charts

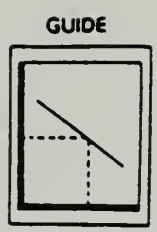
Surface Roughness Charts

Crater Time Worksheets for Chemical and Nonchemical Environments

Spall Time Worksheets for Chemical and Nonchemical Environments

Density Ratio

Source: TO IF-4E-1
Date: 1 November 1970
Data Basis: Flight Test



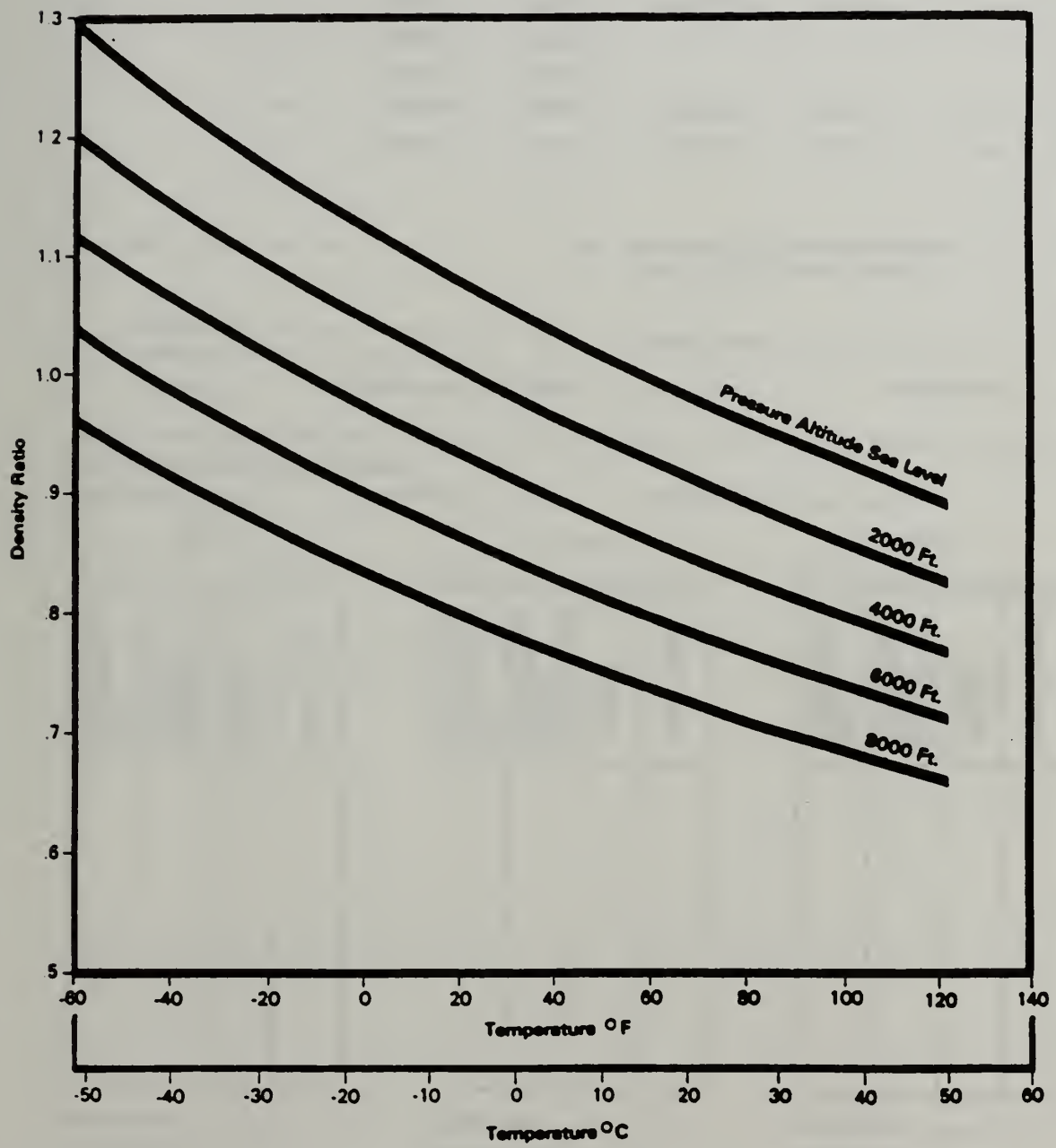


Figure B-3. Density Ratio Graph



MOS SELECTION FORM

(CIRCLE CONDITIONS THAT APPLY, FILL IN APPLICABLE BLANKS)

AIRCRAFT	F-4 C/D	TAKEOFF	LANDING	EVACUATION	BARRIER	
	F-4 E	TAKEOFF	LANDING	EVACUATION	BARRIER	
	F-15	TAKEOFF	LANDING	AERODYNAMIC	EVACUATION	BARRIER
	F-16	TAKEOFF	LANDING			
	A-10	TAKEOFF	LANDING			
	C-130	TAKEOFF	LANDING	NO BRAKING	WEIGHT = _____	
	C-141	TAKEOFF	LANDING	NO BRAKING	WEIGHT = _____	

RCR: DRY WET ICY

RSC: GOOD (NO SLUSH OR STANDING WATER)
POOR (SLUSH OR STANDING WATER)

TEMPERATURE: _____
PRESSURE ALTITUDE: _____
DENSITY RATIO: _____

DIRECTION: UNIDIRECTIONAL (HEADING = _____) BIDIRECTIONAL

SURFACE ROUGHNESS CHART NUMBERS:

MOS LENGTH _____ MOS WIDTH _____ TAXIWAY WIDTH _____

MOS 1

I.D. _____

DISTANCE FROM BEGINNING OF MOS	DISTANCE FROM OTHER END OF MOS (BIDIRECTIONAL)	APPARENT DIAMETER	REPAIR QUALITY

NO. OF SPALLS _____
RECOVERY TIME _____

MOS 2

I.D. _____

DISTANCE FROM BEGINNING OF MOS	DISTANCE FROM OTHER END OF MOS (BIDIRECTIONAL)	APPARENT DIAMETER	REPAIR QUALITY

NO. OF SPALLS _____
RECOVERY TIME _____

MOS 3

I.D. _____

DISTANCE FROM BEGINNING OF MOS	DISTANCE FROM OTHER END OF MOS (BIDIRECTIONAL)	APPARENT DIAMETER	REPAIR QUALITY

NO. OF SPALLS _____
RECOVERY TIME _____

Figure B-4. MOS Selection Form



Table B-2. Taxiway Criteria

AIRCRAFT	REPAIRED WIDTH (FEET)	CLEARED WIDTH (FEET)	SWEPT WIDTH (FEET)	90° TURN WIDTH (FEET)	180° TURN WIDTH (FEET)	MINIMUM CRATER SPACING* (FEET)
F-4	25	35	35	30	50	50
C-130	30	135	100	50	100	66
C-141	50	170	85	75	140	NONE
F-15	25					
F-16	25					
A-10	25					
A-7	25					
F-111	25					
C-5A	60					
DC-10	60					
DC-747	60					

*FOR MINIMUM SPACING INDICATED, 4.5-INCH REPAIR QUALITY WITH MAXIMUM TAXI SPEED OF 10 KNOTS IS ALLOWED. WHEN SPACING IS LESS, UPGRADE REPAIR QUALITY TO 3 INCHES OR REDUCE MAXIMUM TAXI SPEED TO 5 KNOTS.

Table B-3. F-4E

(TAKEOFF WEIGHT ≤ 57,000 POUNDS
LANDING WEIGHT ≤ 38,000 POUNDS)

F-4E

CHART NUMBER	OPERATION MODE				RUNWAY CONDITION			DENSITY RATIO		
	TAKEOFF	LANDING	EVACUATION	BARRIER	DRY	WET	ICY	0.9	1.0	1.1
101	X				X	X	X	X		
102	X				X	X	X		X	
103	X				X	X	X			X
104		X			X			X		
105		X			X				X	
106		X			X					X
107		X				X		X		
108		X				X			X	
109		X				X				X
110		X					X		X	X
111		X		X	X	X	X	X	X	X
112			X		X	X	X	X		
113			X		X	X	X		X	
114			X		X	X	X			X

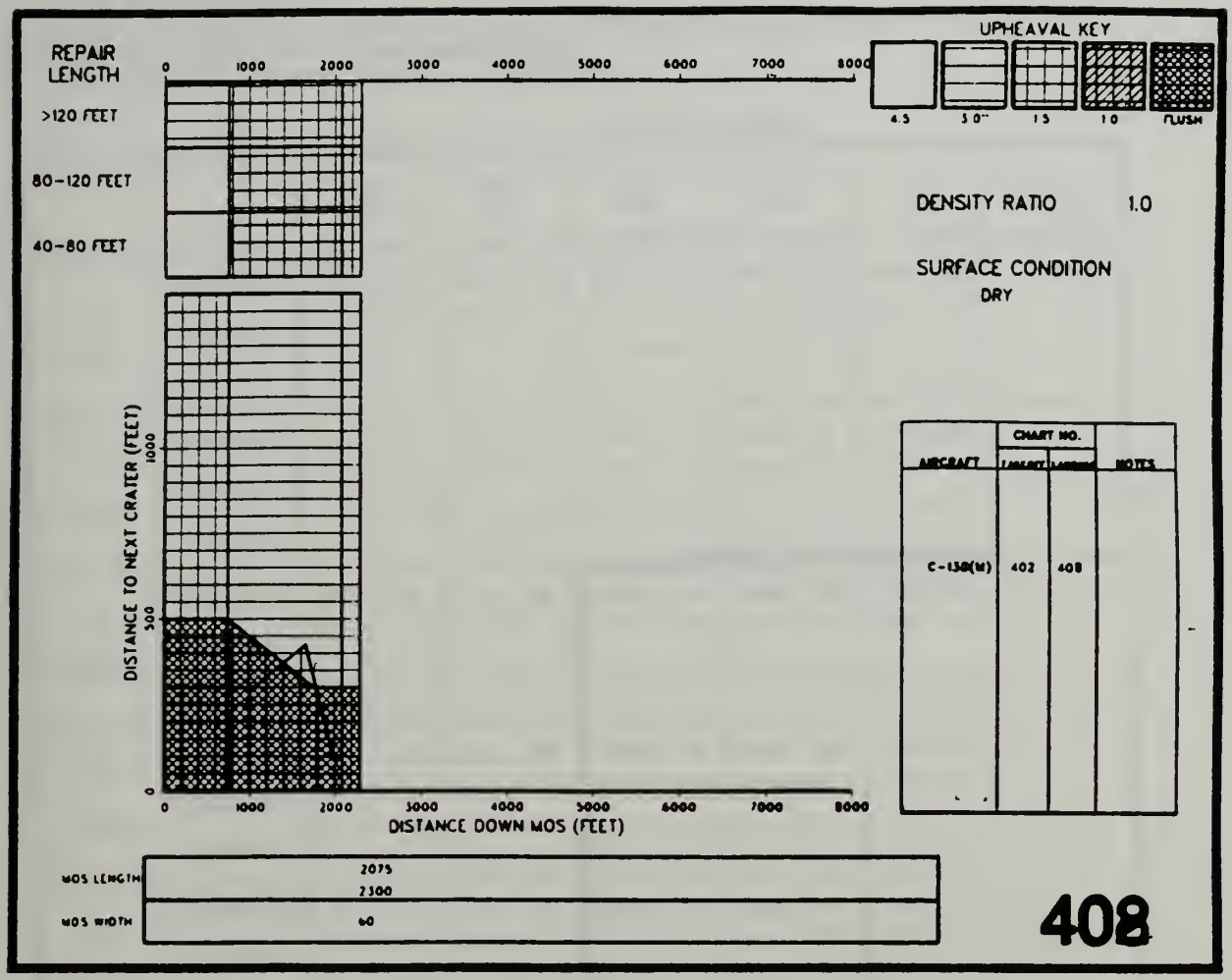


Figure 4-4. Surface Roughness Charts 402 and 408 (Overlaid)

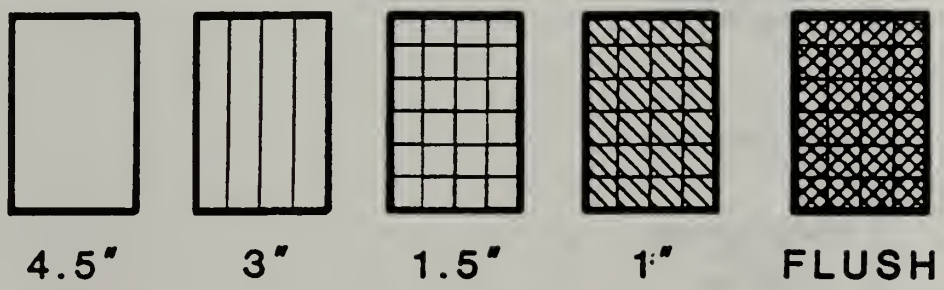


Figure 4-5. Upheaval Key

1,055, 1,600, and 4,290 feet. By observing the lowest repair quality for each zone, a repair quality of 1.5 inches or better is necessary to the left of the 1,055-foot mark, while 4.5 inches or better is needed to the right. This process helps you to choose an MOS that has no craters to repair in those zones which require a high repair quality (1 inch or flush).



RRR TIME WORKSHEET FOR NONCHEMICAL ENVIRONMENT

MOS IDENTIFICATION:

USE THE SMALLEST NUMBERS IN PARENTHESES FOR AS MANY WHOLE CRATERS AS THERE ARE REPAIR TEAMS.
USE THE SECOND NUMBER FOR ALL OTHER WHOLE CRATERS.
USE 3/4 OF THE SECOND NUMBER (x .75) FOR PARTIAL CRATERS.

APPARENT DIAMETER

REPAIR QUALITY

		10 FEET	20 FEET	30 FEET	40 FEET	50 FEET	TIME (MINUTES)
0.0 INCH	TIME/REPAIR	(120) 60	(230) 140	(330) 210	(510) 255	(760) 275	
	NUMBER						
	SUBTOTAL						
1.0 INCH	TIME/REPAIR	(100) 50	(165) 100	(235) 150	(385) 180	(640) 200	
	NUMBER						
	SUBTOTAL						
1.5 INCHES	TIME/REPAIR	(95) 50	(135) 80	(305) 135	(480) 225	(645) 340	
	NUMBER						
	SUBTOTAL						
3.0 INCHES	TIME/REPAIR	(80) 40	(105) 60	(250) 130	(365) 180	(470) 250	
	NUMBER						
	SUBTOTAL						
4.5 INCHES	TIME/REPAIR	(80) 40	(90) 50	(225) 125	(315) 160	(390) 210	
	NUMBER						
	SUBTOTAL						
						TOTAL CRATER REPAIR TIME =	
						FROM SPALL TABLE	
						DIVIDE BY NUMBER OF TEAMS RRR TIME =	

Figure B-8. RRR Time Worksheet for Nonchemical Environment



RRR TIME WORKSHEET FOR CHEMCIAL ENVIRONMENT

MOS IDENTIFICATION:

USE THE SMALLEST NUMBERS IN PARENTHESES FOR AS MANY WHOLE CRATERS AS THERE ARE REPAIR TEAMS.
USE THE SECONO NUMBER FOR ALL OTHER WHOLE CRATERS.
USE 3/4 OF THE SECOND NUMBER (x .75) FOR PARTIAL CRATERS.

APPARENT OIAMETER

REPAIR QUALITY			10 FEET	20 FEET	30 FEET	40 FEET	50 FEET	TIME (MINUTES)
0.0 INCH	TIME/REPAIR		(155) 95	(315) 225	(460) 340	(670) 415	(930) 445	
	NUMBER							
	SUBTOTAL							
1.0 INCH	TIME/REPAIR		(130) 80	(225) 160	(325) 240	(495) 290	(765) 325	
	NUMBER							
	SUBTOTAL							
1.5 INCHES	TIME/REPAIR		(125) 80	(185) 130	(390) 220	(620) 365	(855) 550	
	NUMBER							
	SUBTOTAL							
3.0 INCHES	TIME/REPAIR		(105) 65	(140) 95	(330) 210	(475) 290	(625) 405	
	NUMBER							
	SUBTOTAL							
4.5 INCHES	TIME/REPAIR		(105) 65	(120) 80	(305) 205	(410) 255	(510) 330	
	NUMBER							
	SUBTOTAL							
		TOTAL CRATER REPAIR TIME						
		FROM SPALL TABLE						
		DIVIDE BY NUMBER OF TEAMS						
		RRR TIME =						

Figure B-9. RRR Time Worksheet for Chemical Environment



Table B-12. Spall Table for Nonchemical Environment

SPALL TABLE FOR NONCHEMICAL ENVIRONMENT

CRATER REPAIR TIME (MINUTES)	100	200	300	400	500	600
3000	3000	3000	3000	3000	3071	3176	3281	3000
	2900	2900	2900	2900	2900	2900	2900	2900	3004	3109	3214	
2800	2800	2800	2800	2800	2800	2800	2800	2832	2937	3042	3147	2800
	2700	2700	2700	2700	2700	2700	2700	2700	2766	2870	2975	3080
2600	2600	2600	2600	2600	2600	2600	2600	2600	2698	2803	2908	3013	2600
	2500	2600	2500	2600	2600	2600	2500	2627	2632	2737	2842	2947	
2400	2400	2400	2400	2400	2400	2400	2400	2460	2665	2670	2775	2880	2400
	2300	2300	2300	2300	2300	2300	2300	2393	2496	2603	2708	2813	
2200	2200	2200	2200	2200	2200	2200	2221	2326	2431	2536	2641	2746	2200
	2100	2100	2100	2100	2100	2100	2164	2259	2364	2469	2574	2679	
2000	2000	2000	2000	2000	2000	2000	2087	2192	2297	2402	2507	2612	2000
	1900	1900	1900	1900	1900	1916	2021	2126	2231	2336	2441	2546	
1800	1800	1600	1800	1800	1600	1649	1964	2059	2164	2269	2374	2479	1800
	1700	1700	1700	1700	1700	1782	1887	1992	2097	2202	2307	2412	
1600	1600	1600	1600	1600	1610	1715	1820	1926	2030	2135	2240	2345	1600
	1600	1500	1600	1600	1543	1646	1753	1868	1963	2068	2173	2278	
1400	1400	1400	1400	1400	1476	1581	1686	1791	1896	2001	2106	2211	1400
	1300	1300	1300	1306	1410	1616	1620	1725	1830	1935	2040	2145	
1200	1200	1200	1200	1236	1343	1446	1563	1668	1763	1868	1973	2078	1200
	1100	1100	1100	1171	1276	1361	1486	1691	1696	1801	1906	2011	
1000	1000	1000	1000	1104	1209	1314	1419	1524	1629	1734	1839	1944	1000
	900	900	932	1037	1142	1247	1352	1457	1562	1667	1772	1877	
800	800	800	866	971	1076	1161	1286	1391	1496	1601	1706	1811	800
	700	700	799	904	1009	1114	1219	1324	1429	1534	1639	1744	
600	600	627	732	837	942	1047	1152	1257	1362	1467	1572	1677	600
	500	660	665	770	875	980	1086	1190	1295	1400	1505	1610	
400	400	493	598	703	808	913	1016	1123	1228	1333	1438	1543	400
	321	426	631	636	741	846	951	1056	1161	1266	1371	1476	
200	266	360	465	570	675	780	685	990	1095	1200	1305	1410	200
	188	293	398	503	608	713	618	923	1028	1133	1238	1343	

TOTAL NUMBER OF SPALLS

Table B-13. Spall Table for Chemical Environment

SPALL TABLE FOR CHEMCIAL ENVIRONMENT

CRATER REPAIR TIME (MINUTES)	100	200	300	400	500	600
4000	4300	4698	4897	6195	5494	6792	5091	5389	5688	5988	7286	7583	4000
	4200	4498	4797	5095	5394	6692	5991	6289	6588	6888	7186	7483	
3800.	4100	4396	4697	4995	5294	5592	5891	6189	6488	6786	7086	7383	3800
	4000	4298	4597	4895	5194	5492	5791	6089	6388	6685	8986	7283	
3600	3900	4198	4497	4795	5094	6392	5691	6989	6288	6588	6885	7183	3600
	3600	4098	4397	4696	4994	6292	6691	6889	6188	6488	8786	7083	
3400	3700	3998	4297	4595	4894	5192	5491	5789	6088	6388	8688	8983	3400
	3600	3898	4197	4496	4794	5092	5391	5689	5988	6286	8686	6883	
3200	3500	3798	4097	4395	4694	4992	5291	6689	5888	6186	6486	8783	3200
	3400	3698	3997	4295	4594	4892	6191	5489	5788	6088	8386	6683	
3000	3300	3698	3897	4196	4494	4792	6091	8389	6888	8988	8288	8583	3000
	3200	3498	3797	4096	4394	4692	4991	8289	6888	5888	6188	6483	
2800	3100	3398	3697	3996	4294	4692	4891	8189	5488	8788	6088	8383	2600
	3000	3298	3597	3895	4194	4492	4781	5089	6388	5686	6886	8283	
2600	2900	3198	3497	3795	4094	4392	4691	4988	5288	8588	6886	8183	2600
	2600	3098	3397	3696	3994	4292	4691	4889	8188	5488	8786	6083	
2400	2700	2998	3297	3696	3894	4192	4491	4789	5088	8386	8888	8983	2400
	2800	2898	3197	3496	3794	4092	4391	4689	4988	8286	8888	6883	
2200	2600	2798	3097	3396	3694	3892	4291	4589	4888	5186	5488	8783	2200
	2400	2698	2997	3296	3594	3892	4192	4489	4788	5086	5385	5683	
2000	2300	2698	2897	3198	3494	3792	4091	4389	4688	4986	5288	5583	2000
	2200	2498	2797	3096	3394	3892	3991	4289	4888	4888	8188	5483	
1800	2100	2398	2697	2996	3294	3592	3891	4189	4488	4786	5088	5383	1800
	2000	2298	2597	2896	3194	3492	3791	4089	4388	4888	4985	5283	
1600	1900	2198	2497	2795	3094	3392	3691	3989	4288	4588	4888	8183	1600
	1800	2098	2397	2696	2994	3292	3691	3889	4188	4488	4788	6083	
1400	1700	1898	2297	2896	2894	3192	3491	3788	4088	4388	4688	4983	1400
	1600	1898	2197	2498	2794	3092	3391	3689	3988	4286	4588	4883	
1200	1500	1798	2097	2396	2694	2992	3291	3589	3888	4188	4488	4783	1200
	1400	1698	1997	2295	2594	2892	3191	3489	3788	4088	4386	4683	
1000	1300	1698	1897	2196	2494	2792	3091	3389	3888	3986	4285	4583	100
	1200	1498	1797	2096	2394	2892	2991	3289	3588	3888	4188	4483	
800	1100	1398	1897	1996	2294	2892	2891	3189	3488	3788	4088	4383	600
	1000	1298	1597	1896	2194	2492	2791	3089	3388	3688	3985	4283	
600	900	1198	1497	1798	2094	2392	2691	2989	3288	3588	3888	4183	600
	800	1098	1397	1696	1994	2292	2691	2889	3188	3488	3788	4083	
400	700	998	1297	1896	1894	2192	2491	2789	3088	3388	3688	3983	400
	800	698	1197	1496	1794	2092	2391	2689	2888	3288	3586	3883	
200	500	798	1097	1396	1694	1992	2291	2689	2888	3188	3488	3783	200
	400	898	997	1296	1594	1892	2191	2489	2788	3088	3386	3883	

TOTAL NUMBER OF SPALLS

Appendix F
NASKEF PUBLIC WORKS THREAT CONDITION SUPPORT PLAN

Ref: (a) NASKEFINST 5530.1C

1. The Commanding Officer, Naval Air Station, Keflavik is responsible for the security of the agreed area. The establishment of threat conditions provides a smooth transition from normal to expanded security.

2. Threat Conditions. Threat condition (THREATCONS) and measures which shall be considered for implementation are:

a. THREATCON ALPHA : A general warning of possible terrorist activity, the nature and extent of which are unpredictable.

1. Notify all officers, chief petty officers and division directors of the change in THREATCON. Brief all personnel of the THREATCON and initiate checklist completion. Remind personnel to be suspicious and inquisitive about strangers, particullary those carrying suitcases or other containers. Watch for unidentified vehicles on the NATO Base. Watch for abondoned parcels or suitcases and any unusual activity. Notify NAS Security of anything out of the ordinary.
2. Review building plans available to the PWD Duty Section and BSRCC and ensure they have access to a complete set for all failities in case of evacuation of any area is required. Coordinate with PWD Engineering to obtain access to additional plans, if required. Current location of the PWO, APWO, Operations Officer and Transportation Officer should be known to the PWD Duty Section at all times. Review Recall Bill for accuracy.
3. Secure all buildings, rooms and storage areas not in regular use.
4. Increase security spot checks of vehicles.
5. Assist Security in limiting access points for vehicles and personnel, as needed.
6. As a deterrent, apply the following measures individually and randomly:
   (a) Secure and regulary inspect all buildings, rooms and storage areas not in use.
   (b) At the beginning and end of each workday, and at other regular and frequent intervals, inspect the interior and exterior of buildings in regular use for suspicious activities or packages.
7. Review Facility Contingency Plan and prepare to take actions to enhance security, survivability and recovery of key facililities. Review all plans, orders, personnel details and logistic requirements related to the introduction of higher THREATCONs. Review Mass Casualty and Bomb Threat procedures
8. Coordinate with NAS Security and AFI-DE for any heavy equipment assistance required.
9. Report to NAS Security when all appropriate actions have been initiated.

b. THREATCON BRAVO : This condition is declared when there is increased and more predicatble threat of terrorist activity even though no particular target is identified.

1. Repeat Measure 1 and warn all personnel.

2. PWO, APWO, Operations Officer and Transportation are to be reachable at all times via telephone or radio.
3. Check plans for implementation of next THREATCON conditions.
4. Move all vehicles and large objects at least 25 meters from key base facilities. Assist where necessary in moving dumpsters and other large objects.
5. Secure and regulary inspect all buildings, rooms and storage areas not in daily use.
6. At the beginning and end of each workday, and at other regular and frequent intervals, inspect the interior and exterior of buildings in regular use for suspicious activities or packages.
7. Examine all mail.
8. Remove signs from all facilities.
9. Make staff and family members aware of the general situation to stop rumors and prevent unnecessary alarm.
10. Remind personnel traveling off-base to exercise additional care and ensure all personnel lock their vehicles when not in use or under their direct observation. All vehicles should be checked for unidentified objects before being operated. All military vehicles traveling on official business off or between agreed areas are required to phone Security upon departure and return.
11. Erect barriers to control traffic flow. Coordinate with Security on assistance required.
12. Report to NAS Security when all appropriate actions have been initiated.

c. THREATCON CHARLIE : This condition is delcared when an incident occurs or when intelligence is received indicating that some form of terrorist action against installations and personnel is imminent.
1. Review and check all THREATCON ALPHA and BRAVO actions. Report all outstanding actions to Security.
2. All officers, chief petty officers and division directors will be on call. Augment PWD Duty Section, including one officer and chief, to ensure quick response to several simultaneous emergencies.
3. Limit access points to all critical facilities to one entrance only and control entry.
4. Man all critical facilities 24 hours per days. Conduct security checks of the exterior of all facilities every 30 minutes.
5. Coordinate with Security for obtaining security guards for critical facilities.
6. Cancel all regular bus runs, including school buses, and be prepared to provide additional support to base commands.
7. Check plans for the implementation of THREATCON DELTA.
8. Report to NAS Security when all appropriate actions have been initiated.

d. THREATCON DELTA : A terrorist attack has occurred or intelligence has been received that terrorist actions against a specific location is likely
1. Review and check all THREATCON conditions actions. Report all outstanding actions to Security.
2. Activate a BSRCC. Begin around the clock operations.
3. Require positive identification from all personnel entering facilities. Check all mail, briefcases, packages, etc, for explosives and weapons.

4. Ensure at least two personnel respond to each job. Maintain a continuous cheld on the location of all PWD personnel responding to trouble calls.
5. Suspend all minor, specific and PMI work and concentrate on emergency calls as much as possible. Minimize all administrative journeys and visits.
6. Report to NAS Security when all appropriate actions have been initiated.

Bibliography

20th Naval Construction Regiment, Rapid Runway Repair: RRR Level I (PRCP Skill 985.1) Student Guide, Gulfport, MS, 3 March 1993.

Air Force Engineering and Services Center, Contingency Response Procedures (93-12), HQ AFESC/DEO, Tyndall, FL, undated.

Air Force Engineering and Services Center, Volume 1: Pre-Disaster Planning, HQ AFESC/DEO, Tyndall, FL, undated.

Air Force Engineering and Services Center, Volume 2: Post-Disaster Planning, HQ AFESC/DEO, Tyndall, FL, undated.

Air Force Engineering and Services Center, Volume 3: Bare Base Conceptual Planning Guide (DRAFT), HQ AFESC/DEO, Tyndall, FL, undated.

Boudra, William F., "Engineers Restore Hope", The Military Engineer, No. 557, July 1993, pp 4-9

Bunker, Robert M., "Military Engineers and Disaster Relief: Hurricane Hugo", The Military Engineer, No. 534, Mar-Apr 1990, pp 36-39.

"Emergency Capability Listing", The Military Engineer, No. 556, May-Jun 1993, pp 193-208.

Federal Emergency Management Agency, Are You Ready? Your Guide to Disaster Preparedness (H-34), U.S. Printing Office, Washington, D.C., September 1990.

Genega, Stanley G., "When Nature Strikes Back: From One Edge of Amercia to the Other, Trouble Was Brewing", The Military Engineer, No. 553, Nov-Dec 1992, pp 4-6.

"HURRICANE Preparedness Guide", The Gainesville Sun, 29 June 1993

Johnson, Ronald N., Disaster Preparedness Plan for Southern Division, Naval Facilities Engineering Command, June 1990.

Lathan, Larry G. and Robert C. Swan, "Disaster Debris", The Military Engineer, No 557, July 1993, pp 37-39.

Major, David J., NASKEF OPLAN 9000: Facility Contingency Plan for Naval Air Station Keflavik, Iceland (DRAFT), 1 July 1992.

McAuliffe, Michael A, "Andrew, Prince of Storms",.The Military Engineer, No. 553, Nov-Dec 1992, pp 6-8.

Murray, Thomas D., "Disaster Decision", The Military Engineer, No. 557, July 1993, pp 31-33.

Naval Education and Training Command, SEABEE Combat Handbook (NAVEDTRA 10479-C2), United States Printing Office, Washington, 1985.

Pettterson, Grant C., "FEMA and Hugo", The Military Engineer, No. 534, Mar-Apr 1990, pp 40-42.

Taric, Alexander G., "Earthquakes and Our National Defense", The Military Engineer, No. 534, March/April 1990, pp 31-35.

United States Automobile Associations, USAA Catastrophe History - 1992, 1922 USAA Annual Progress Report, undated, pg 21.

United States, Department of Defense, Department of the Navy, OPNAVINST 3100.6(series), U.S. Navy, Washington, undated.

U. S. Naval Construction Battalion Command, COMCBPAC/COMCBLANT OPLAN 9000 (DRAFT), U.S. Pacific Fleet, Pearl Harbor, HI, 18 June 1990.

Ward, John G., "Disaster Assistance: Time for Change?", The Military Engineer, No. 557, July 1993, pp 16-17.

432 T09

DUDLEY KNOX LIBRARY
NAVAL POSTGRADUATE SCHOOL
MONTEREY CA 93943-5101



AMERICAN BINDERY
2
6-94

DUDLEY KNOX LIBRARY
3 2768 00019017 7